

# VERY DENNISON RETAIL INFORMATION SERVICES LLC

## BLUETOOTH RADIO MODULE

Model: 129514

HOST Model: Pathfinder 6057 1D Scanner, Pathfinder 6057 2D Scanner


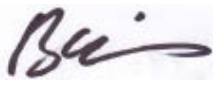
November 03 2011

Report No.: SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

|   |  |
|---|--|
|  |  |
| Dan Coronia<br>Compliance Engineer  | Leslie Bai<br>Director of Certification  |

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All Test Data Presented in this report is only applicable to presented Test sample.

# RF Test Report

To: FCC Part 15.247: 2011 & RSS 210 Issue 8: 2010

SIEMIC, INC.  
Assessing global markets



## Laboratory Introduction

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### Accreditations for Conformity Assessment

| Country/Region | Accreditation Body     | Scope                                |
|----------------|------------------------|--------------------------------------|
| USA            | FCC, A2LA              | EMC , RF/Wireless , Telecom , SAR    |
| Canada         | IC, A2LA, NIST         | EMC, RF/Wireless , Telecom , SAR     |
| Taiwan         | BSMI , NCC , NIST      | EMC, RF, Telecom , Safety            |
| Hong Kong      | OFTA , NIST            | RF/Wireless ,Telecom                 |
| Australia      | NATA, NIST             | EMC, RF, Telecom , Safety            |
| Korea          | KCC/RRA, NIST          | EMI, EMS, RF , Telecom, Safety , SAR |
| Japan          | VCCI, JATE, TELEC, RFT | EMI, RF/Wireless, Telecom            |
| Mexico         | NOM, COFETEL, Caniety  | Safety, EMC , RF/Wireless, Telecom   |
| Europe         | A2LA, NIST             | EMC, RF, Telecom , Safety, SAR       |

### Accreditations for Product Certifications

| Country   | Accreditation Body | Scope                 |
|-----------|--------------------|-----------------------|
| USA       | FCC TCB, NIST      | EMC , RF , Telecom    |
| Canada    | IC FCB , NIST      | EMC , RF , Telecom    |
| Singapore | iDA, NIST          | EMC , RF , Telecom    |
| EU        | NB                 | EMC & R&TTE Directive |
| Japan     | MIC (RCB 208)      | RF , Telecom          |
| HongKong  | OFTA (US002)       | RF , Telecom          |

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# 1 Executive Summary & EUT information

The purpose of this test programmed was to demonstrate compliance of the Avery Dennison Retail Information Services LLC Radio Module, Model: 129514 against the current Stipulated Standards. The complete system Pathfinder 6057 has demonstrated compliance with the FCC 15.247: 2011 & RSS-210 Issue 8: 2010.

The test has demonstrated that this unit complies with stipulated standards.

## EUT Information

|  |   |   |
|--|---|---|
| <b>EUT Description</b>                             | : | Bluetooth module (Model: 129514) with host model Pathfinder 6057 prints, scans bar codes, collects data, and communicates with other devices. |
| <b>Model No</b>                                    | : | 129514  |
| <b>Serial No</b>                                   | : | N/A   |
| <b>HW version</b>                                  | : | N/A   |
| <b>Input Power</b>                                 | : | Battery type:<br>7.4 V Lithium-Ion<br>3.6 V Lithium-Ion (Internal)  |
| <b>Classification Per Stipulated Test Standard</b> | : | Spread Spectrum System / Device   |

## 2 TECHNICAL DETAILS

|  |  |
|--|--|
| <b>Purpose</b>                         | Compliance testing of 129514 with stipulated standard  |
| <b>Applicant / Client</b>              | Avery Dennison Retail Information Services LLC   |
| <b>Manufacturer</b>                    | Avery Dennison Retail Information Services LLC<br>170 Monarch Lane<br>Miamisburg, OH 45342 USA |
| <b>Laboratory performing the tests</b> | SIEMIC Laboratories  |
| <b>Test report reference number</b>    | SL11081802-AVE-017-01_(6057BT)_FCC&IC  |
| <b>Date EUT received</b>               | October 17 2011  |
| <b>Standard applied</b>                | See Page 9   |
| <b>Dates of test (from – to)</b>       | October 19 & 26  |
| <b>No of Units:</b>                    | 2  |
| <b>Equipment Category:</b>             | DSS  |
| <b>Trade Name:</b>                     | Avery Dennison Retail Information Services LLC   |
| <b>Model Name:</b>                     | 129514   |
| <b>RF Operating Frequency (ies)</b>    | 2402 MHz – 2480 MHz  |
| <b>Number of Channels:</b>             | 79 Channel   |
| <b>Modulation:</b>                     | GFSK , $\pi/4$ -DQPSK, 8-DPSK  |
| <b>FCC ID:</b>                         | GU6-WT41   |
| <b>IC ID:</b>                          | 1502A-WT41   |

**3 MODIFICATION**

**NONE**



## 4 TEST SUMMARY

The product was tested in accordance with the following specifications. All testing has been performed according to below product classification:

### Spread Spectrum System / Device

#### Test Results Summary

| Test Standard            | Description                                      | Pass / Fail |
|--------------------------|--|-------------|
| CFR 47 Part 15.247: 2011 | RSS 210 Issue 8: 2010                            |             |
| 15.203                   | Antenna Requirement                              | Pass        |
| 15.205                   | RSS210(A8.5)<br>Restricted Band of Operation     | Pass        |
| 15.207(a)                | RSSGen(7.2.2)<br>Conducted Emission Voltage      | Pass        |
| 15.247(a)(1)             | RSS210(A8.1)<br>Channel Separation               | Pass        |
| 15.247(a)(1)             | RSS210(A8.1)<br>Occupied Bandwidth               | N/A         |
| 15.247(a)(2)             | RSS210 (A8.2)<br>6 dB&20dB Bandwidth             | Pass        |
| 15.247(a)(1)             | RSS210(A8.1)<br>Number of Hopping Channels       | Pass        |
| 15.247(a)(1)             | RSS210(A8.1)<br>Time of Occupancy                | Pass        |
| 15.247(b)                | RSS210(A8.4)<br>Output Power                     | Pass        |
| 15.247(c)                | RSS210(A8.4)<br>Antenna Gain > 6 dBi             | N/A         |
| 15.247(d)                | RSS210(A8.5)<br>Conducted Spurious Emissions     | Pass        |
| 15.209; 15.247(d)        | RSS210(A8.5)<br>Radiated Spurious Emissions      | Pass        |
| 15.247(e)                | RSS210(A8.3)<br>Power Spectral Density           | N/A         |
| 15.247(f)                | RSS210(A8.3)<br>Hybrid System Requirement        | N/A         |
| 15.247(g)                | RSS210(A8.1)<br>Hopping Capability               | Pass        |
| 15.247(h)                | RSS210(A8.1)<br>Hopping Coordination Requirement | Pass        |
| 15.247(i)                | RSSGen(5.5)<br>RF Exposure requirement           | Pass        |
|                          | RSSGen(4.8)<br>Receiver Spurious Emissions       | Pass        |

ANSI C63.4: 2009/ RSS-Gen Issue 3: 2010

PS: All measurement uncertainties are not taken into consideration for all presented test result.

**Note:** EUT supports different data rates and multiple channels, only the worse case test result with maximum data rates at Low, Mid, High channels are presented in this report.

## 5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

### 5.1 Antenna Requirement

**Requirement(s):** 47 CFR §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna requirement must meet at least one of the following:

- a) Antenna must be permanently attached to the device.
- b) Antenna must use a unique type of connector to attach to the device.
- c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device.

EUT use internal PCB antennas for Bluetooth, which is using unique connector. Then peak antenna gain for Bluetooth is: 2.3 dBi.

**Results:** PASS

## 5.2 Conducted Emissions Voltage

Requirement:

| Frequency of emission (MHz) | Conducted limit (dBµV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15–0.5                    | 66 to 56*              | 56 to 46* |
| 0.5–5                       | 56                     | 46        |
| 5–30                        | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

### Procedures:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A “-ve” margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.86 dB.
4. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 24°C     |
| Relative Humidity    | 52%      |
| Atmospheric Pressure | 1019mbar |

Test Date : October 19 & 26 2011  
Tested By : Dan Corona

**Results:** NA

EUT is powered by Battery

### 5.3 Channel Separation

Conducted Measurement

1. EUT was set for low , mid, high channel with modulated mode and highest RF output power. The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 25°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
3. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test Date : October 19 & 26 2011  
Tested By : Dan Corona

**Requirement(s):** Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

**Procedures:** The Channel Separation was measured conducted using a spectrum analyzer at low, mid, and high channels.

**Operational Data Rate: 1 Mbps**

| Channel | Channel Frequency (MHz) | Channel Separation (MHz) |
|---------|-------------------------|--------------------------|
| Low     | 2402                    | 1.05                     |
| Mid     | 2441                    | 1.02                     |
| High    | 2480                    | 1.02                     |

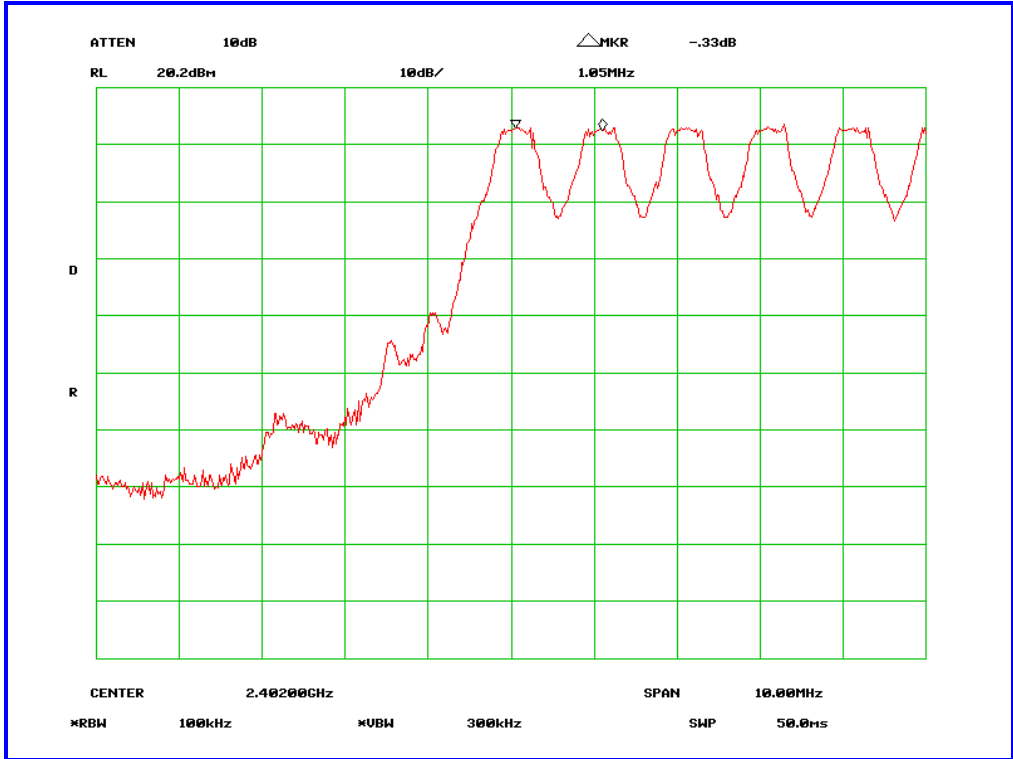
**Operational Data Rate: 2 Mbps**

| Channel | Channel Frequency (MHz) | Channel Separation (MHz) |
|---------|-------------------------|--------------------------|
| Low     | 2402                    | 1.02                     |
| Mid     | 2441                    | 1.02                     |
| High    | 2480                    | 1.02                     |

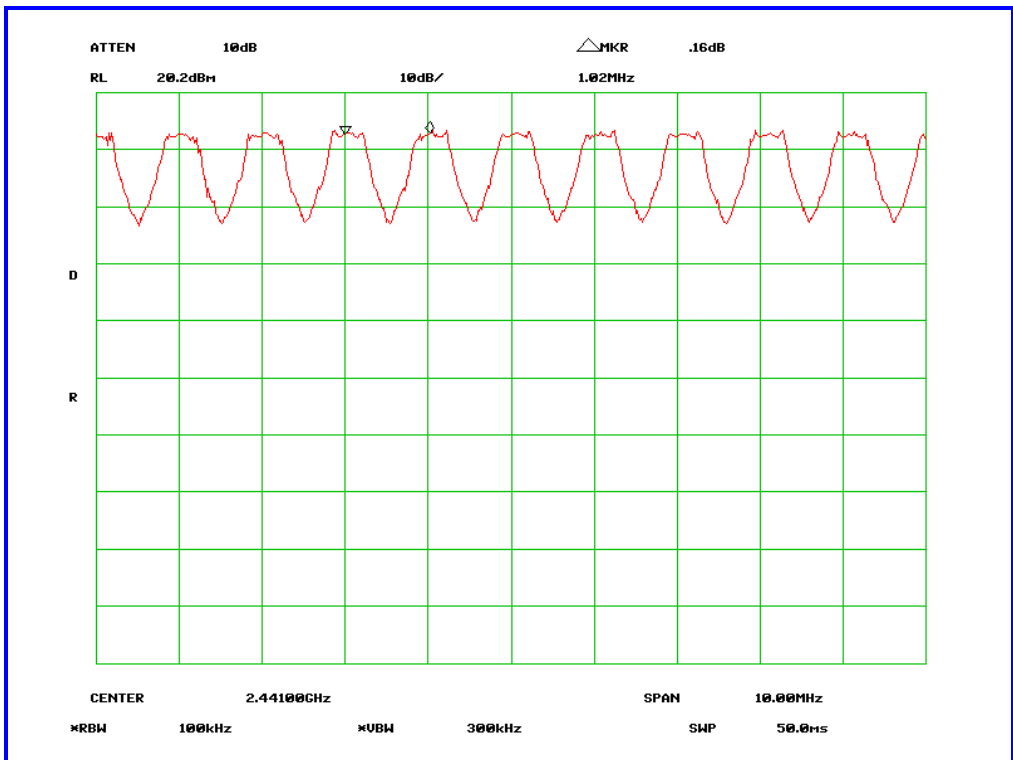
**Operational Data Rate: 3 Mbps**

| Channel | Channel Frequency (MHz) | Channel Separation (MHz) |
|---------|-------------------------|--------------------------|
| Low     | 2402                    | 1.02                     |
| Mid     | 2441                    | 1.03                     |
| High    | 2480                    | 1.02                     |

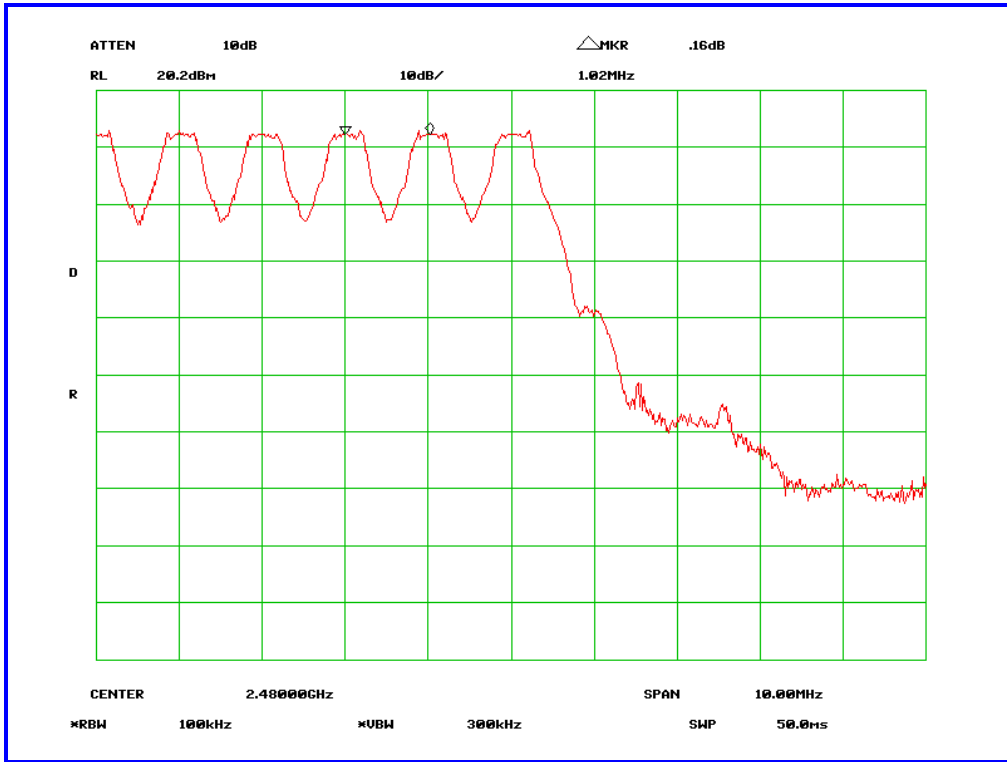
**Low Channel - Data Rate: 1 Mbps**



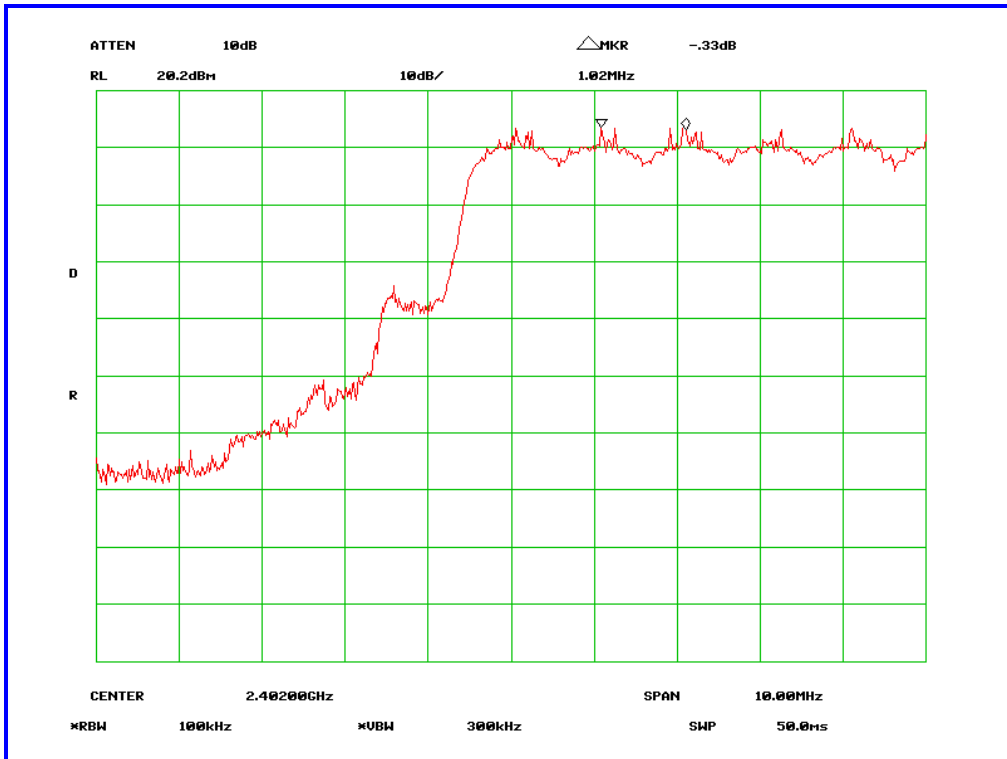
**Middle Channel - Data Rate: 1 Mbps**



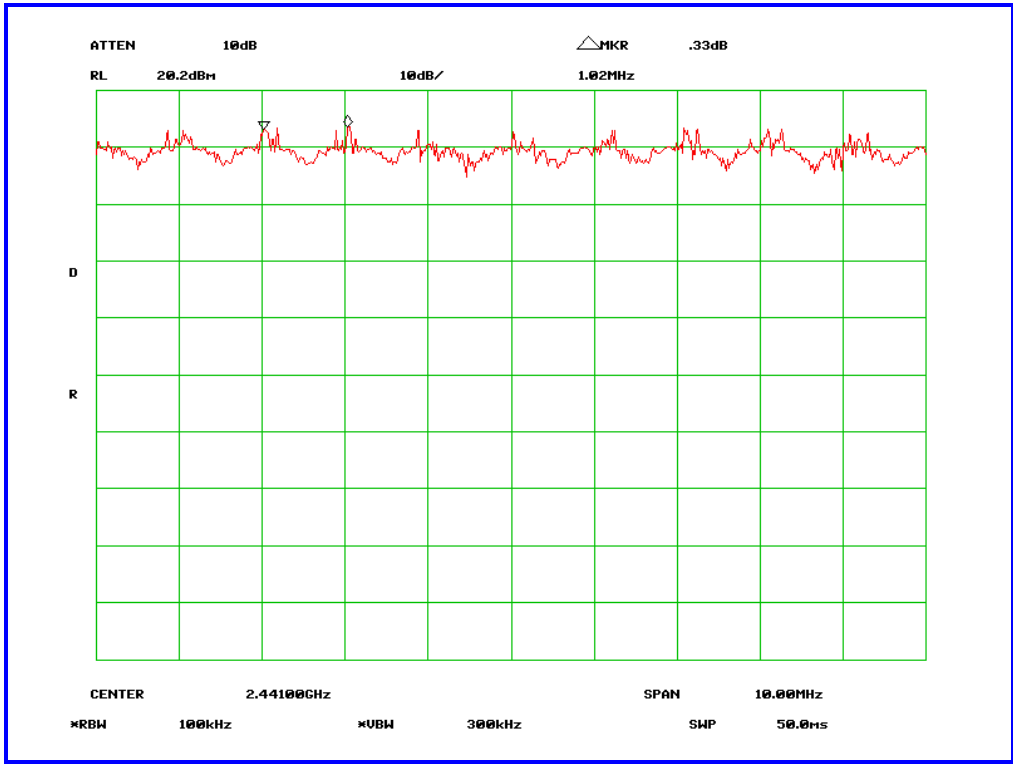
### High Channel - Data Rate: 1 Mbps



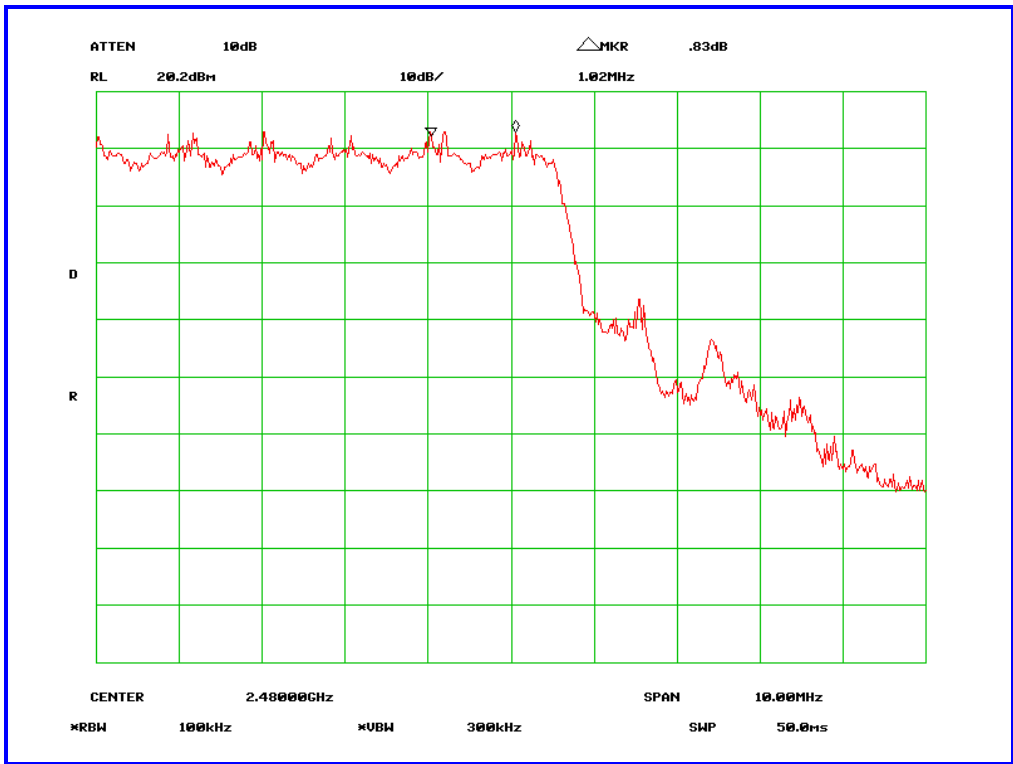
### Low Channel - Data Rate: 2 Mbps



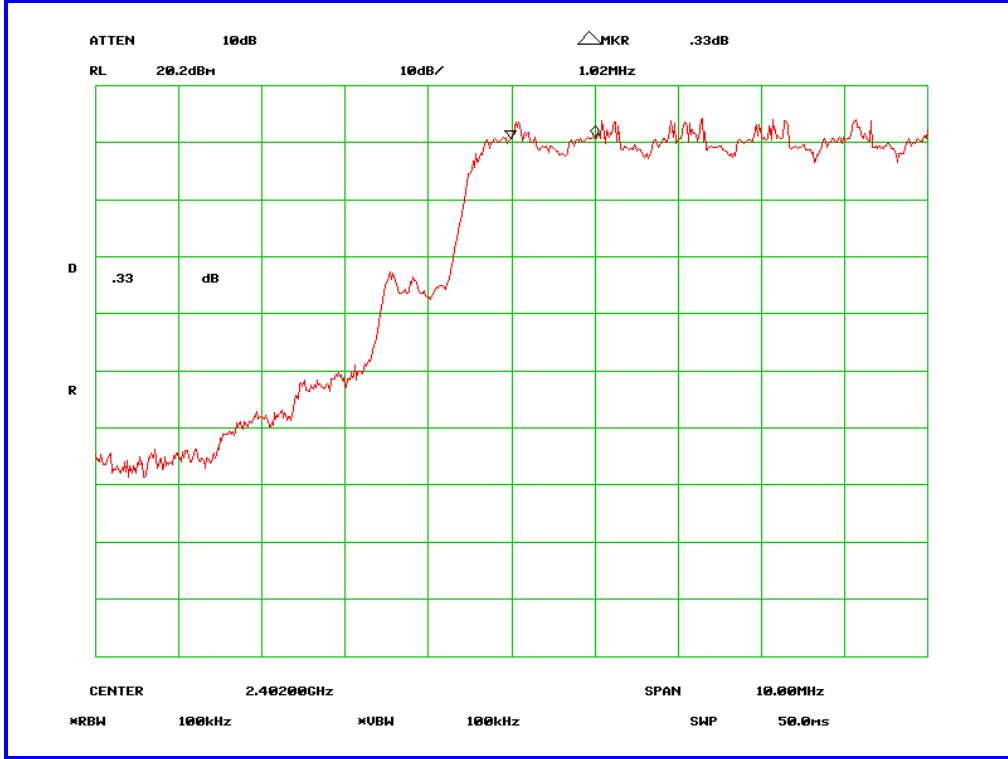
### Middle Channel - Data Rate: 2 Mbps



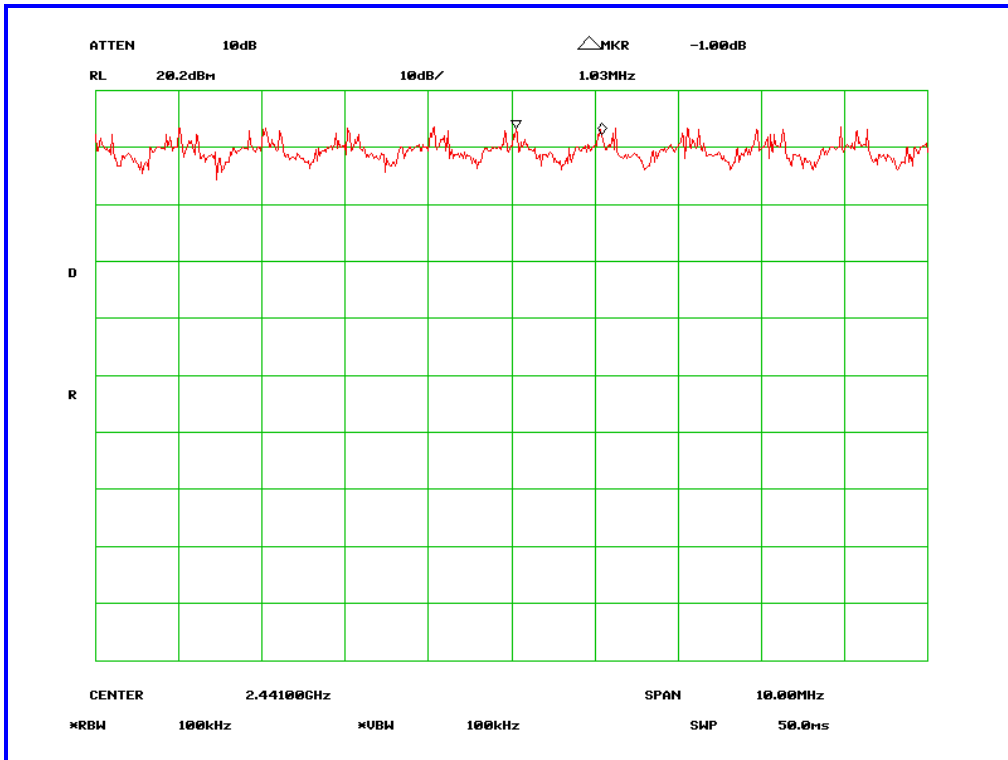
### High Channel - Data Rate: 2 Mbps



### Low Channel - Data Rate: 3 Mbps

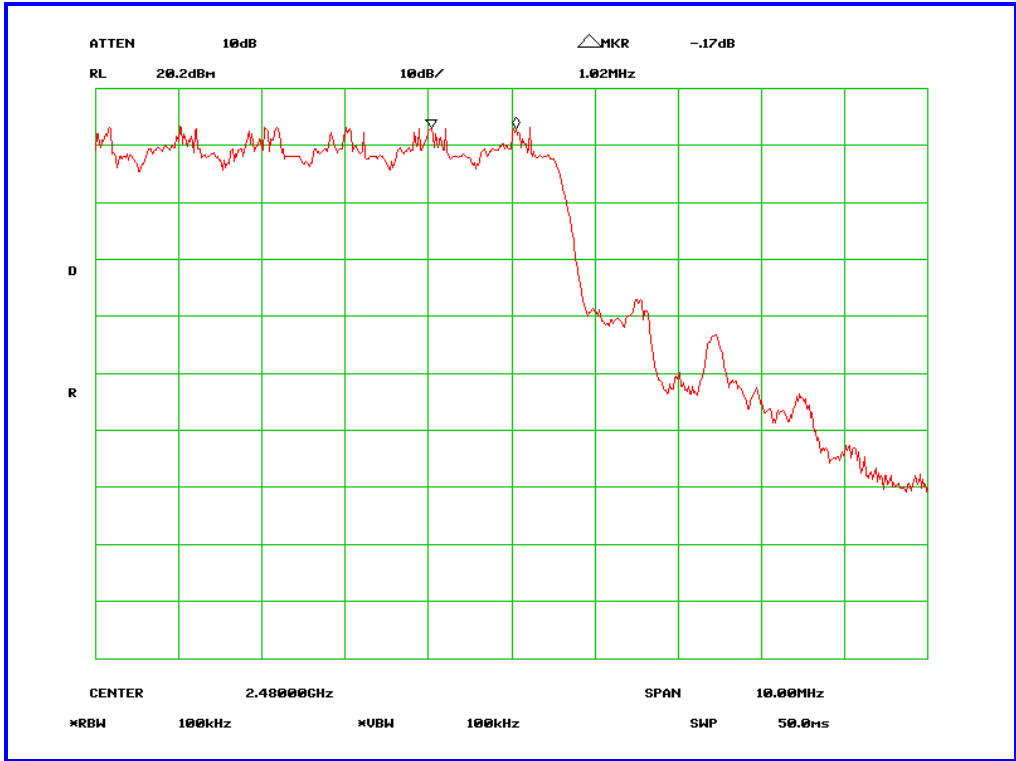


### Middle Channel - Data Rate: 3 Mbps





**High Channel - Data Rate: 3 Mbps**



## **5.4 99% Occupied Bandwidth**

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions  

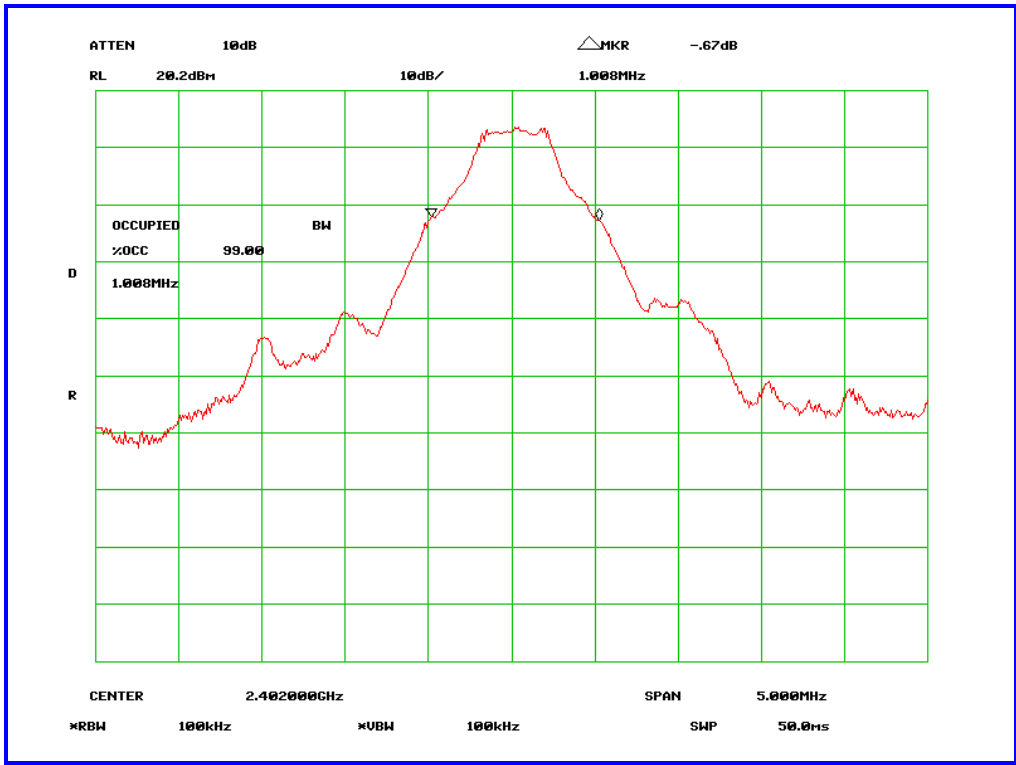
|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
3. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
4. Test Date : October 19 & 26 2011  
Tested By :Dan Coronia

**Requirement(s):**

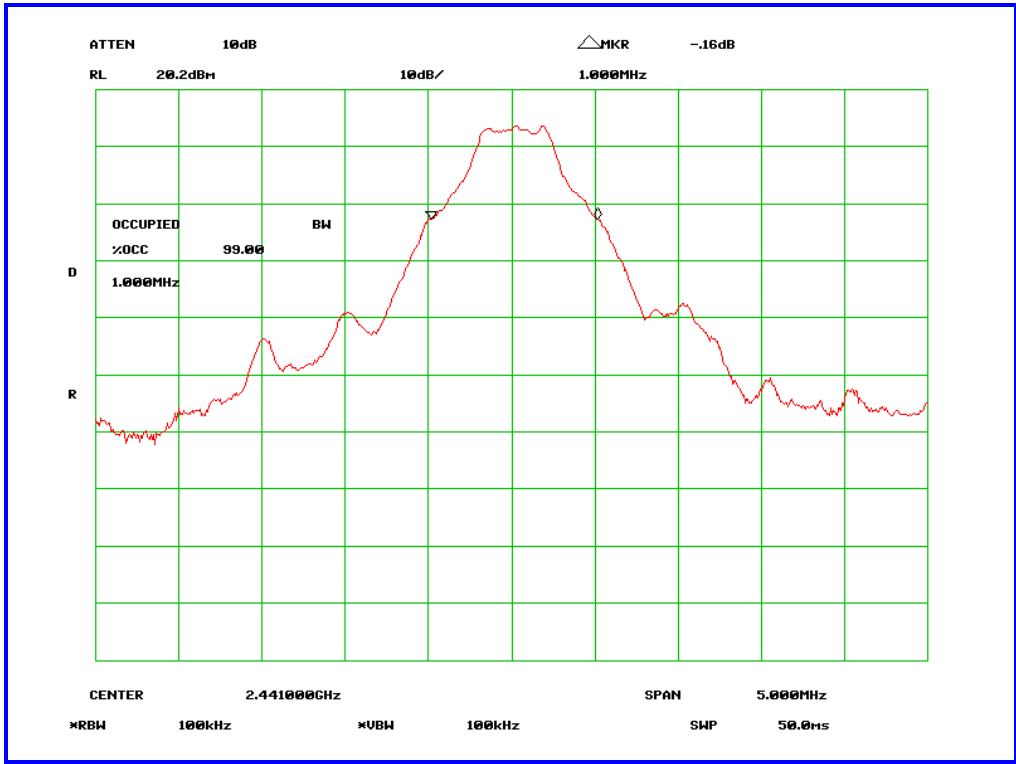
**Procedures:**

**Results:** N/A (attached plots is for reference only)

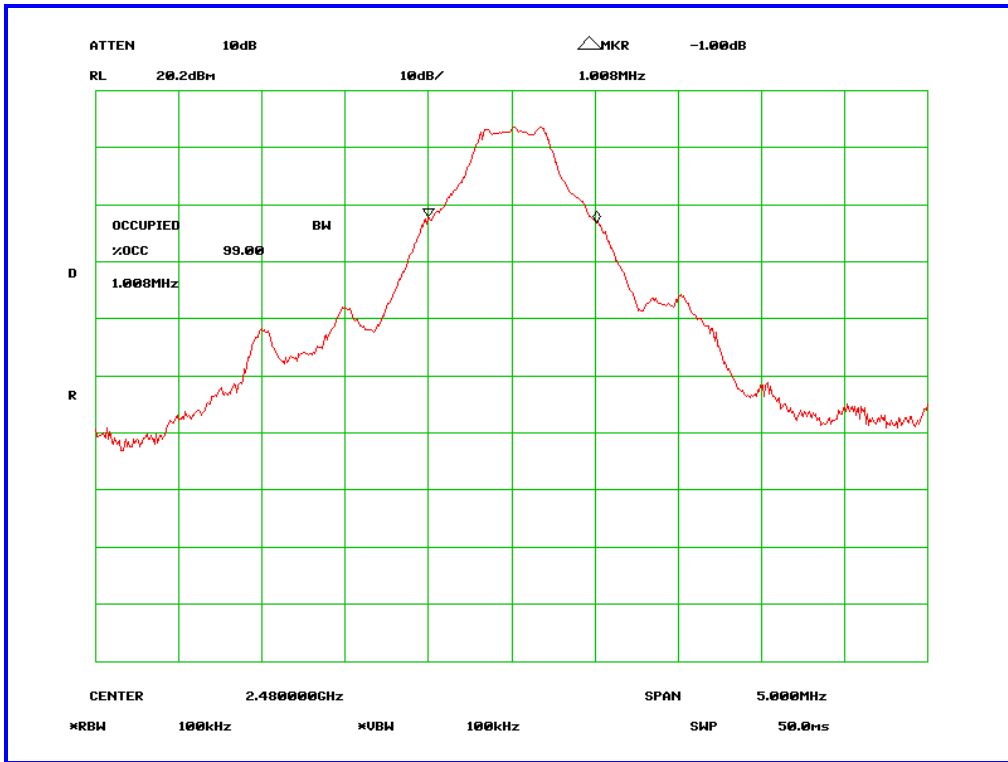
**Low Channel - Data Rate: 1 Mbps (99% Bandwidth)**



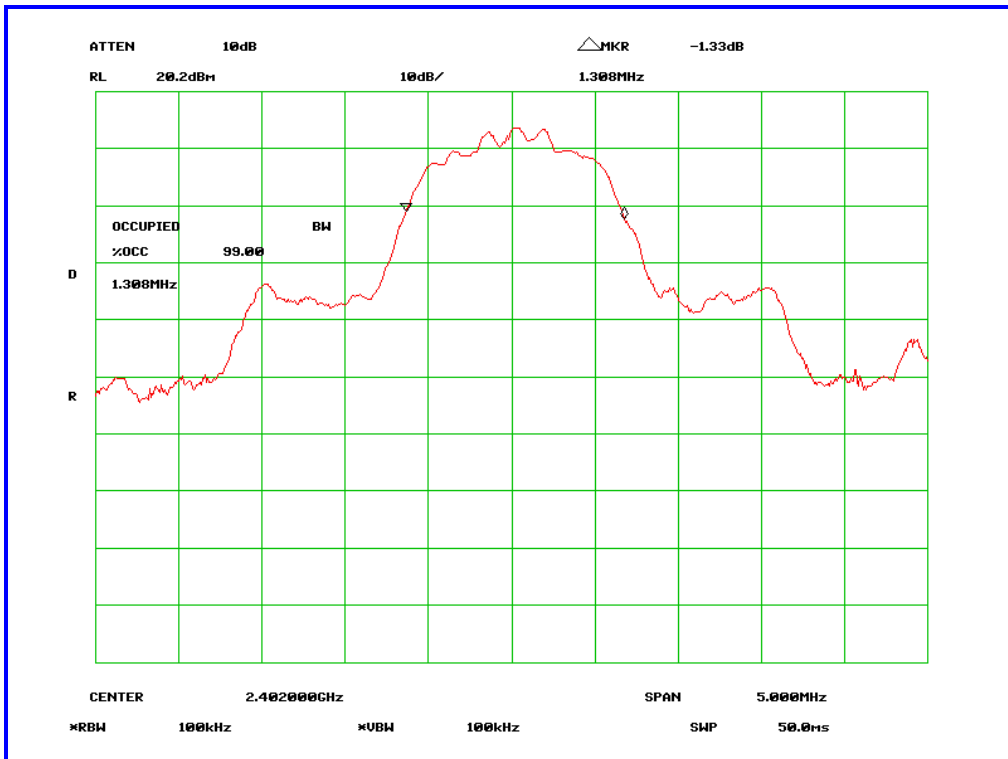
**Middle Channel - Data Rate: 1 Mbps (99% Bandwidth)**



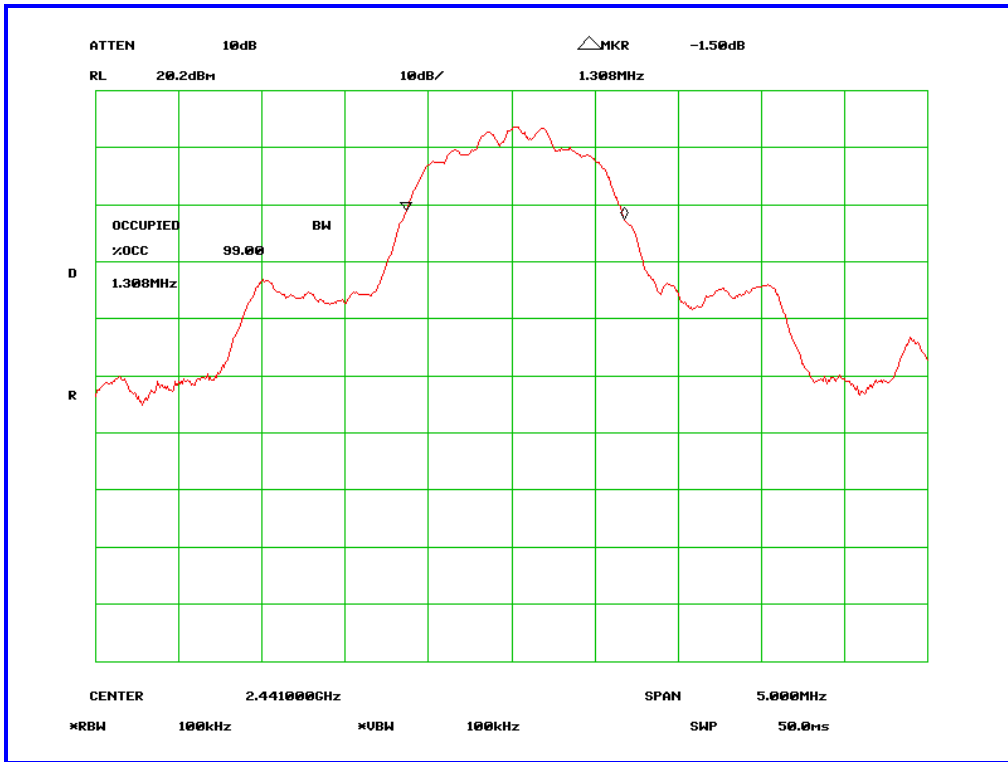
### High Channel - Data Rate: 1 Mbps (99% Bandwidth)



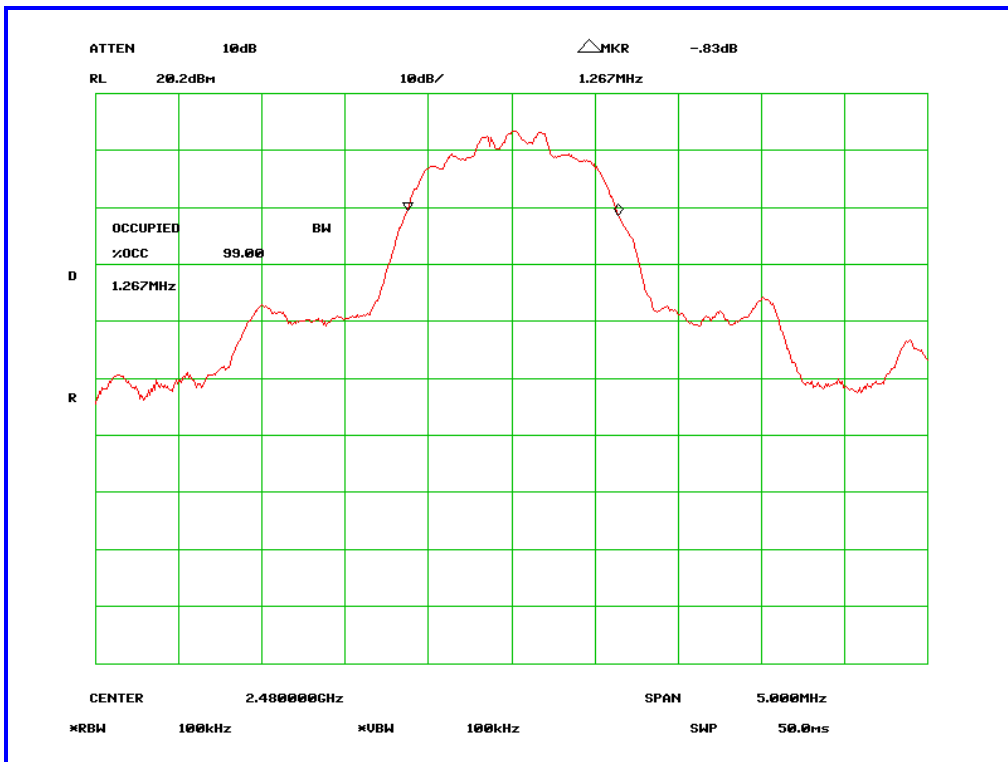
### Low Channel - Data Rate: 2 Mbps (99% Bandwidth)



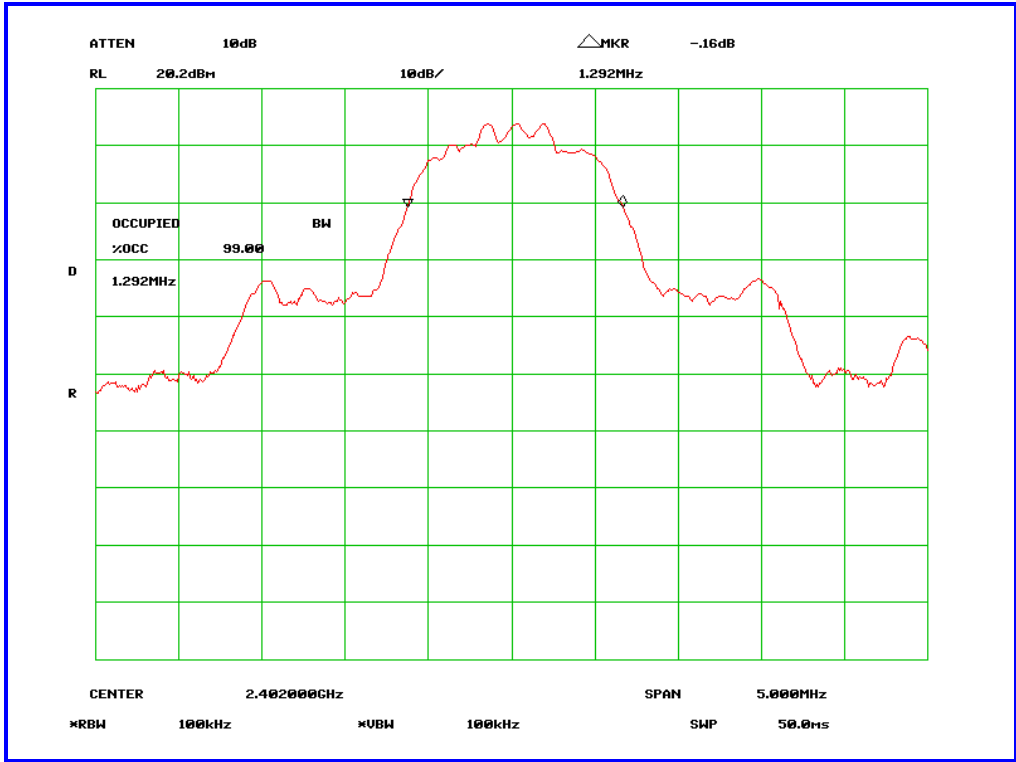
**Middle Channel - Data Rate: 2 Mbps (99% Bandwidth)**



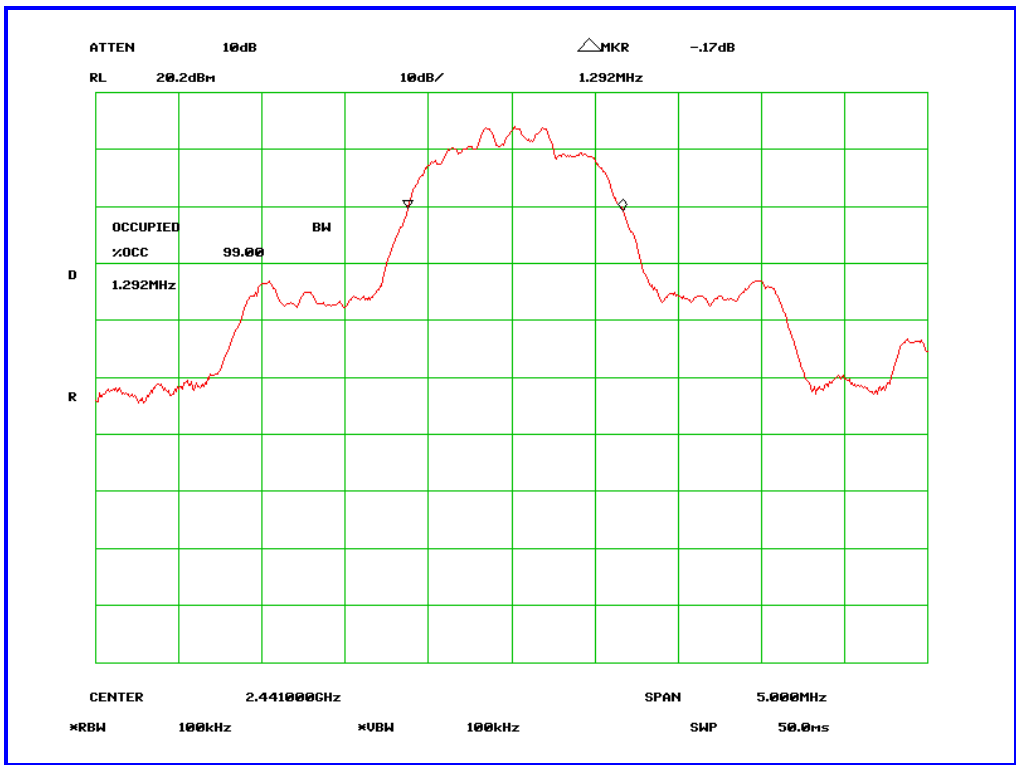
**High Channel - Data Rate: 2 Mbps (99% Bandwidth)**



**Low Channel - Data Rate: 3 Mbps (99% Bandwidth)**



**Middle Channel - Data Rate: 3 Mbps (99% Bandwidth)**





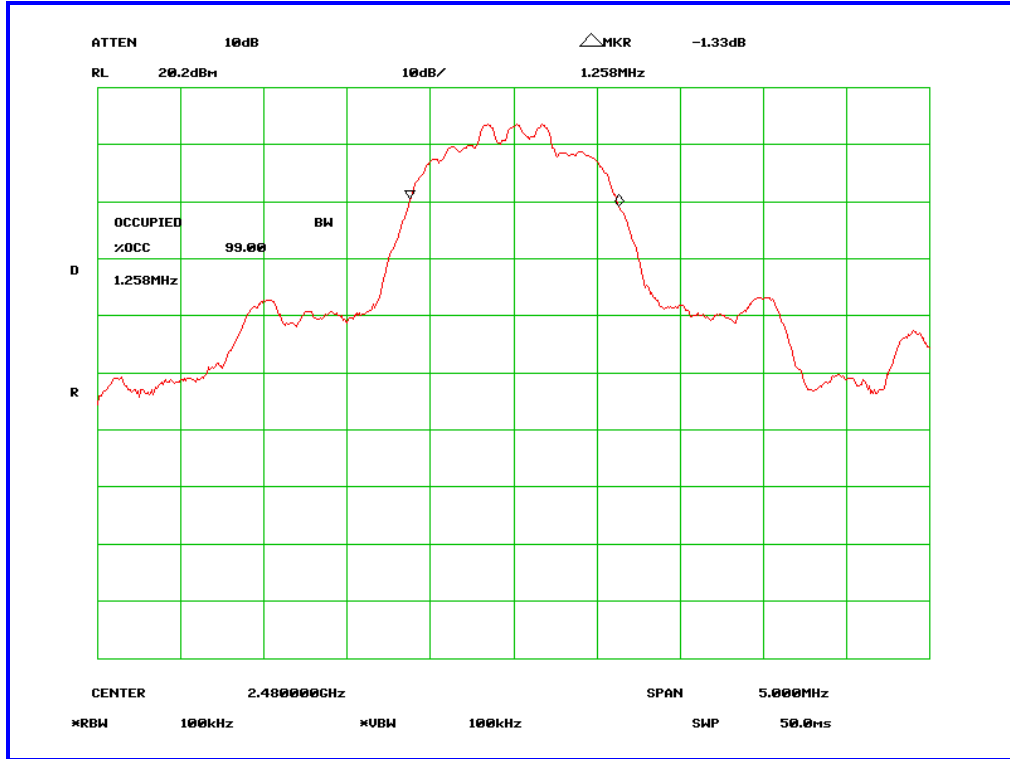
**SIEMIC, INC.**

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Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To: FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
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### High Channel - Data Rate: 3 Mbps (99% Bandwidth)



## 5.5 20dB Occupied Bandwidth

1. Conducted Measurement  
 EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
 The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions
 

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
3. Conducted Emissions Measurement Uncertainty  
 All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
4. Test Date : October 19 & 26 2011  
 Tested By : Dan Corona

**Requirement(s):** Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 2/3 of 20 dB bandwidth of the hopping channel, whichever is greater.

**Procedures:** The 20 dB bandwidths were measured conducted using a spectrum analyzer at low, mid, and hi channels.

**Results:** Pass

### Operational Data Rate: 1 Mbps

| Channel | Channel Frequency (MHz) | 20 dB Bandwidth (MHz) | 2/3 20 dB Bandwidth (MHz) | Limit (MHz) |
|---------|-------------------------|-----------------------|---------------------------|-------------|
| Low     | 2402                    | 1.183                 | 0.789                     | 1.0         |
| Mid     | 2441                    | 1.183                 | 0.789                     | 1.0         |
| High    | 2480                    | 1.183                 | 0.789                     | 1.0         |

### Operational Data Rate: 2 Mbps

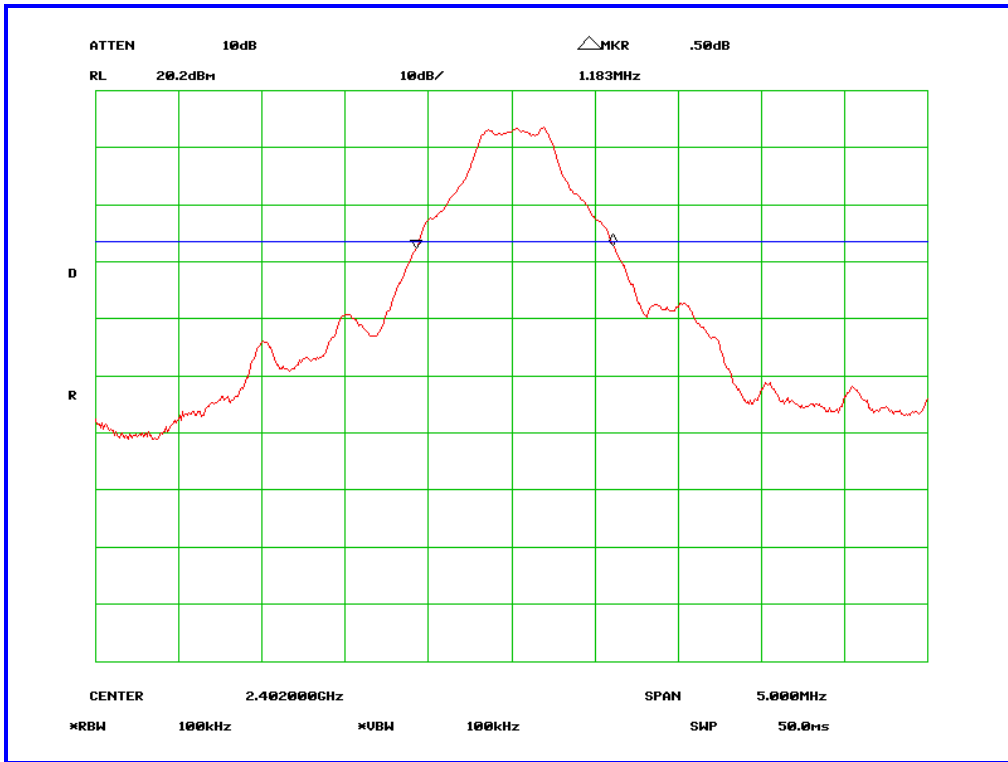
| Channel | Channel Frequency (MHz) | 20 dB Bandwidth (MHz) | 2/3 20 dB Bandwidth (MHz) | Limit (MHz) |
|---------|-------------------------|-----------------------|---------------------------|-------------|
| Low     | 2402                    | 1.475                 | 0.983                     | 1.0         |
| Mid     | 2441                    | 1.475                 | 0.983                     | 1.0         |
| High    | 2480                    | 1.450                 | 0.967                     | 1.0         |

### Operational Data Rate: 3 Mbps

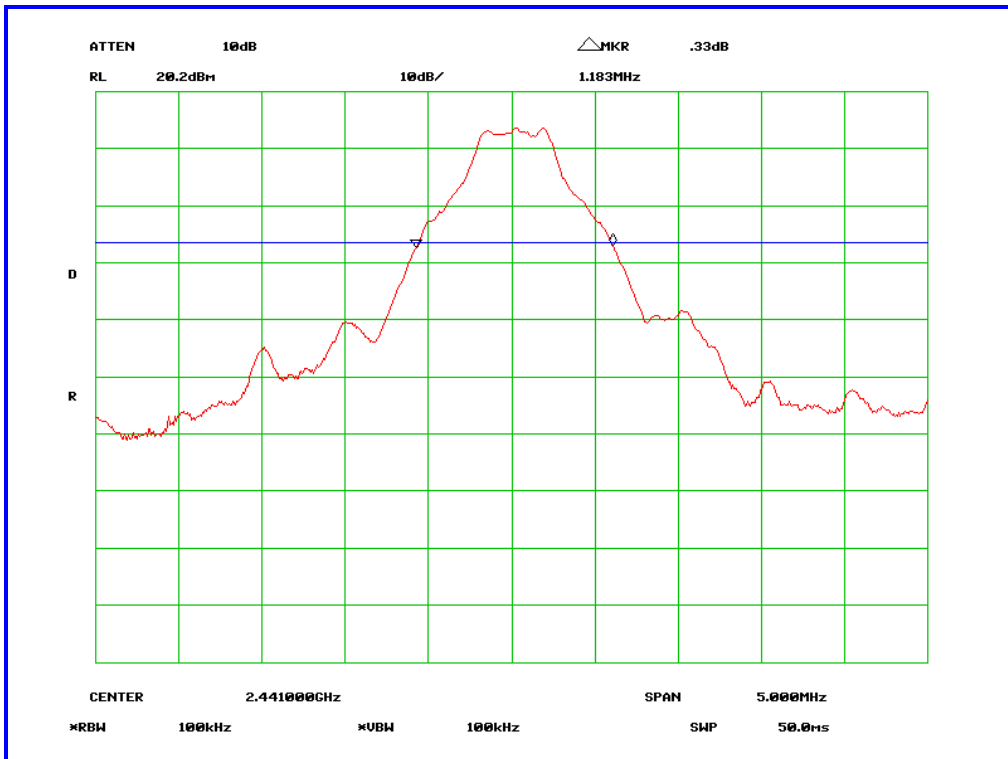
| Channel | Channel Frequency (MHz) | 20 dB Bandwidth (MHz) | 2/3 20 dB Bandwidth (MHz) | Limit (MHz) |
|---------|-------------------------|-----------------------|---------------------------|-------------|
| Low     | 2402                    | 1.467                 | 0.978                     | 1.0         |
| Mid     | 2441                    | 1.467                 | 0.978                     | 1.0         |
| High    | 2480                    | 1.442                 | 0.961                     | 1.0         |



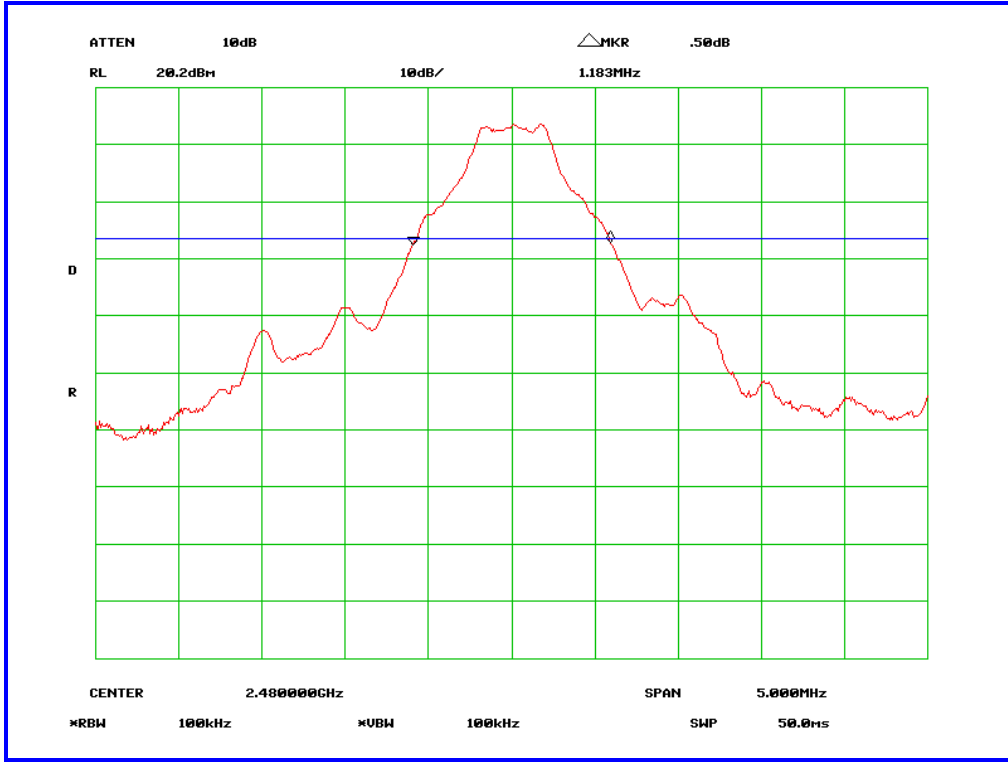
**Low Channel - Data Rate: 1 Mbps (20 dB Bandwidth)**



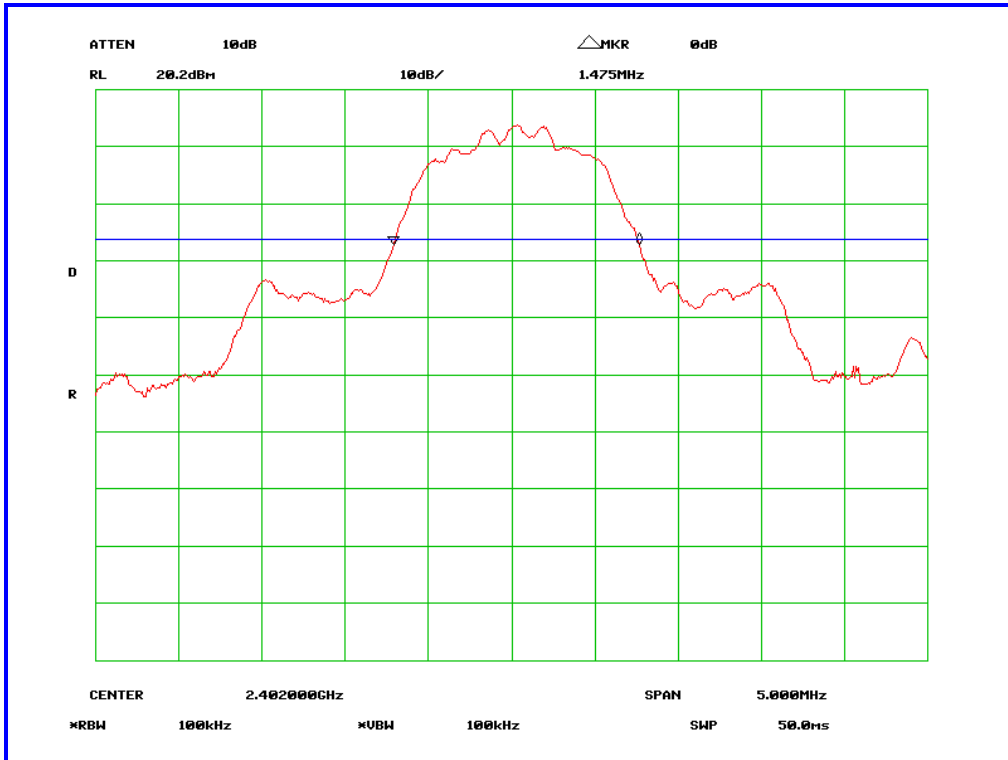
**Middle Channel - Data Rate: 1 Mbps (20 dB Bandwidth)**



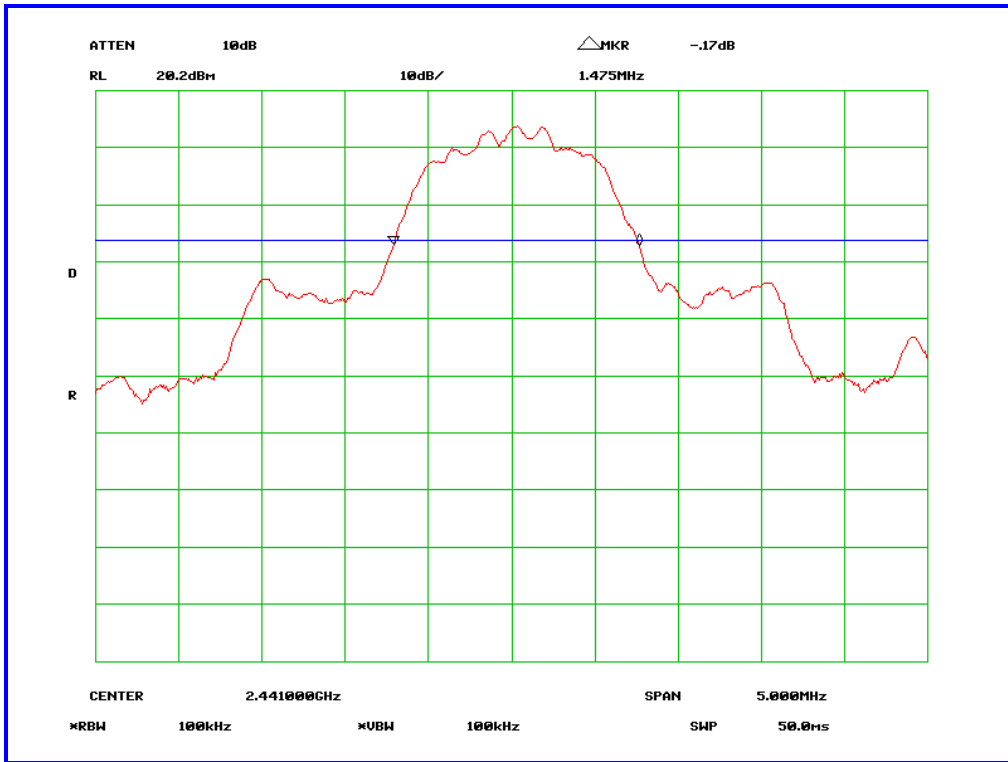
### High Channel - Data Rate: 1 Mbps (20 dB Bandwidth)



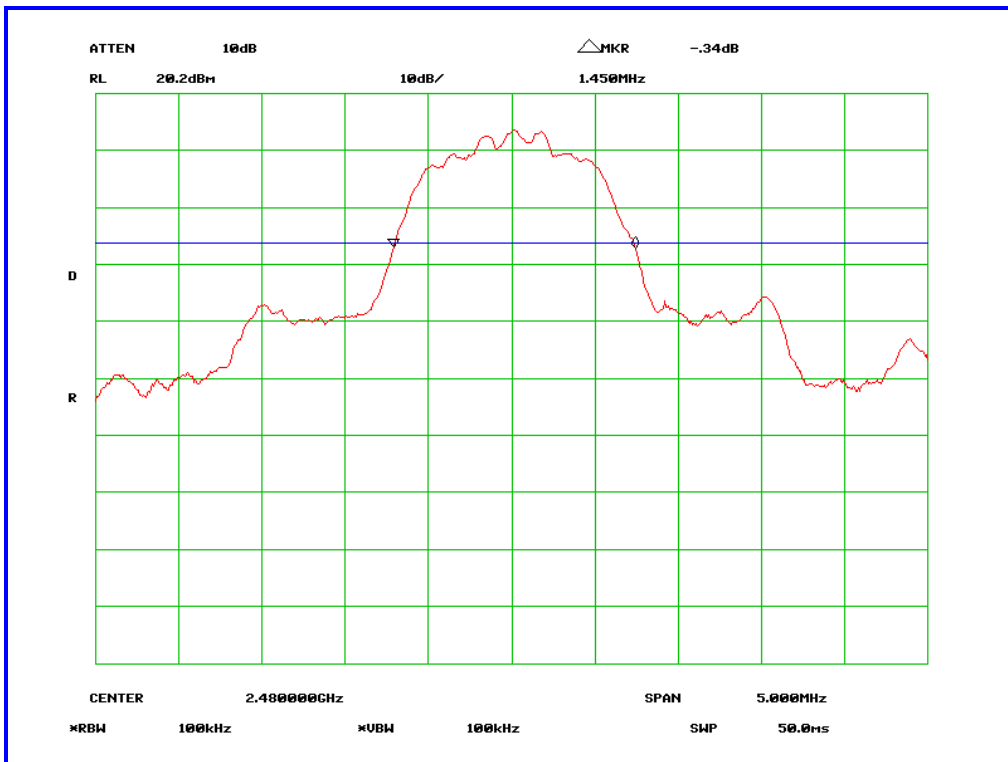
### Low Channel - Data Rate: 2 Mbps (20 dB Bandwidth)



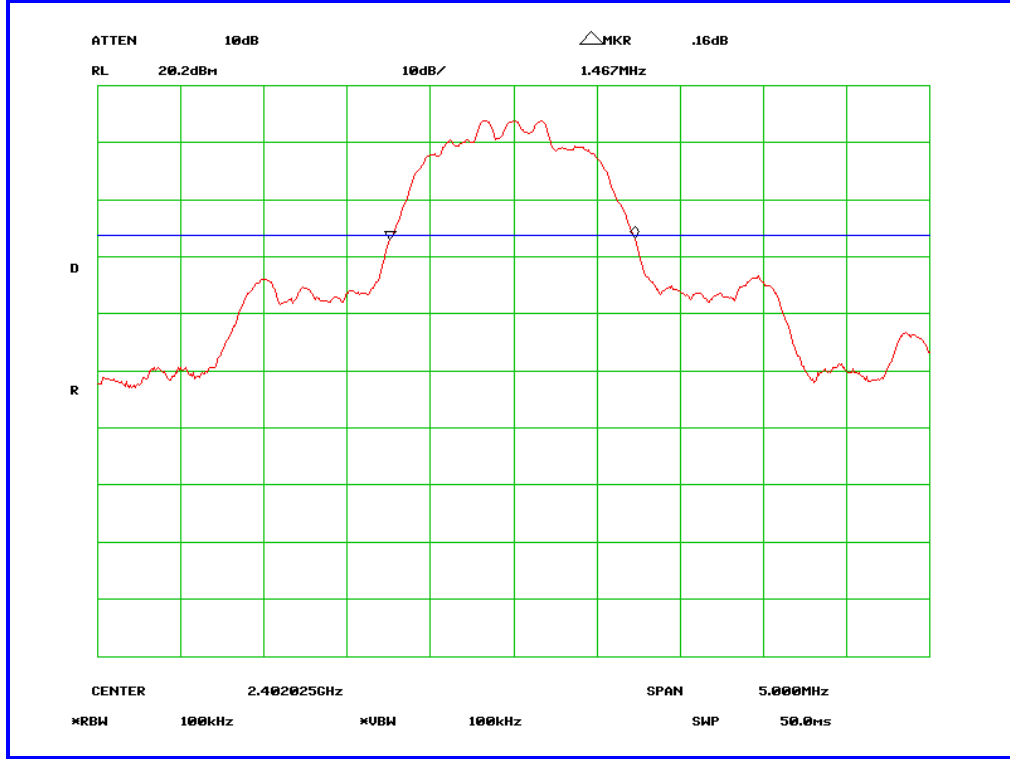
**Middle Channel - Data Rate: 2 Mbps (20 dB Bandwidth)**



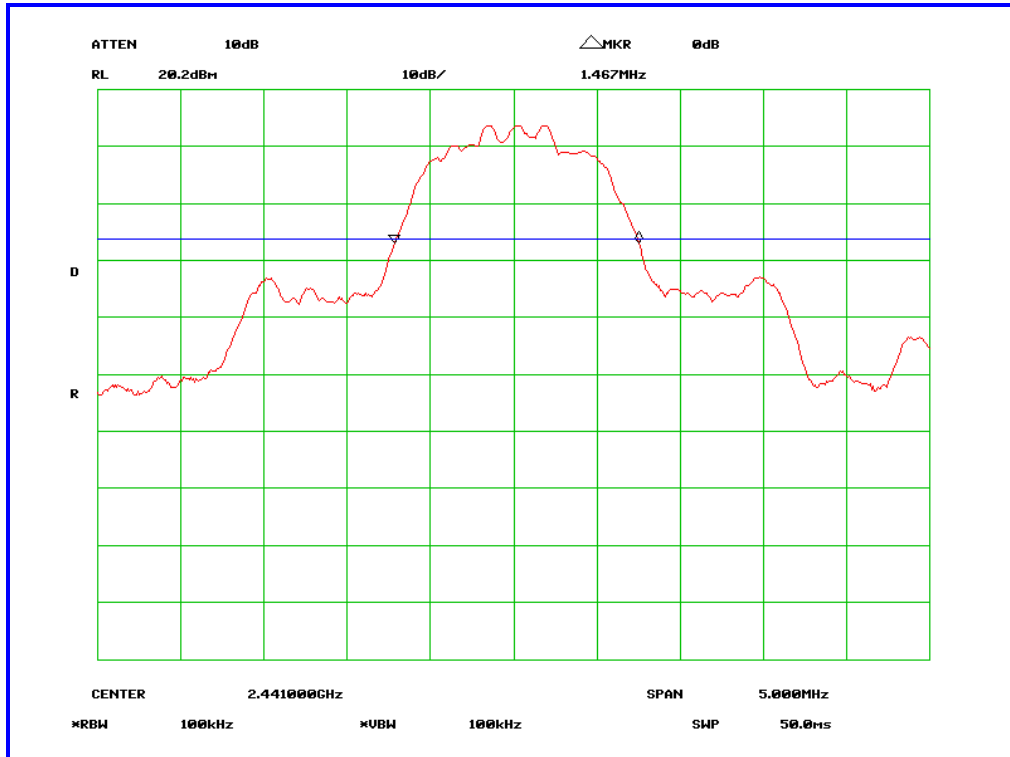
**High Channel - Data Rate: 2 Mbps (20 dB Bandwidth)**



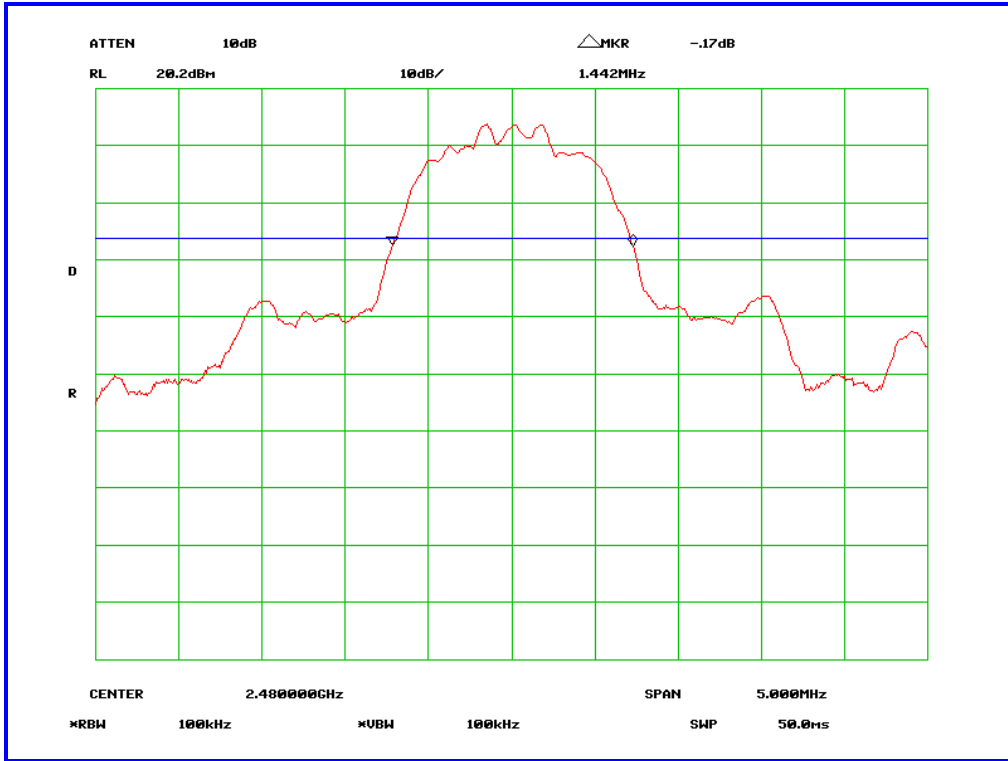
**Low Channel - Data Rate: 3 Mbps (20 dB Bandwidth)**



**Middle Channel - Data Rate: 3 Mbps (20 dB Bandwidth)**



**High Channel - Data Rate: 3 Mbps (20 dB Bandwidth)**



## **5.6 Number of Hopping Channel**

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
3. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 25°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
4. Test Date : October 19 & 26 2011  
Tested By : Dan Corona

### **Standard Requirement:**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

**Procedures:** The Number of Hopping Channel measurement was taken conducted using a spectrum analyzer.

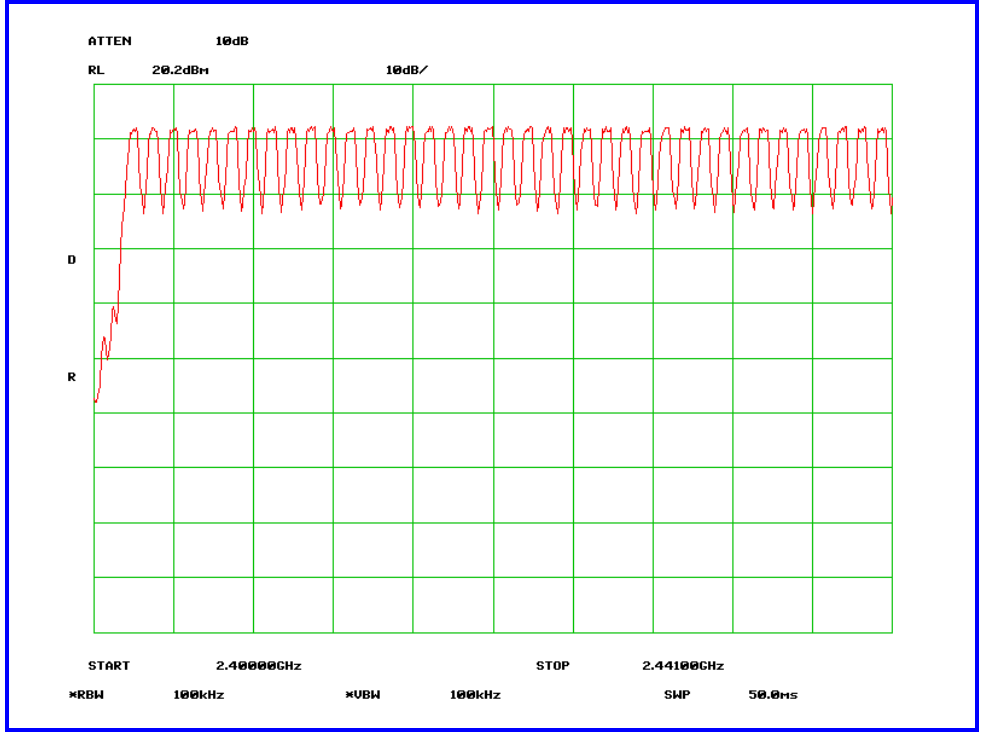
RBW=100 KHz, VBW > RBW

**Test Result:** Pass

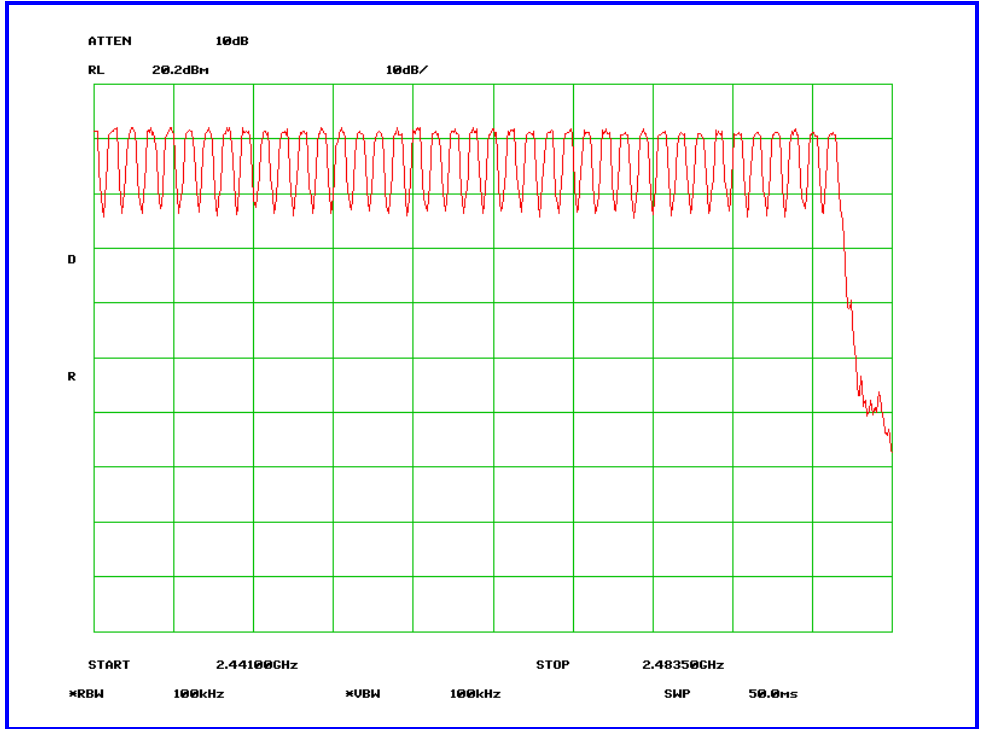
Total Channel: 79 Channels

Refer to the attached plots.

Number of Hopping Channel  
39-Channel (Graph 1)



40-Channel (cont. of Graph 1)



## 5.7 Time of Occupancy

1. Conducted Measurement  
 EUT was set for low, mid, high channel with modulated mode and highest RF output power.  
 The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
 All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
3. Environmental Conditions
 

|                      |          |
|----------------------|----------|
| Temperature          | 25°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
4. Test Date : October 19 & 26 2011  
 Tested By : Dan Corona

**Standard Requirement:**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used

Procedures: The Time of Occupancy measurement was taken conducted using a spectrum analyzer.

**Test Result:** Pass

**Operational Data Rate: 3 Mbps**

| Channel | Channel Frequency<br>(MHz) | Dwell Time<br>(sec) | Limit<br>(sec) |
|---------|----------------------------|---------------------|----------------|
| Low     | 2402                       | 0.345               | 0.4            |
| Mid     | 2441                       | 0.336               | 0.4            |
| High    | 2480                       | 0.345               | 0.4            |

Refer to the attached plots.



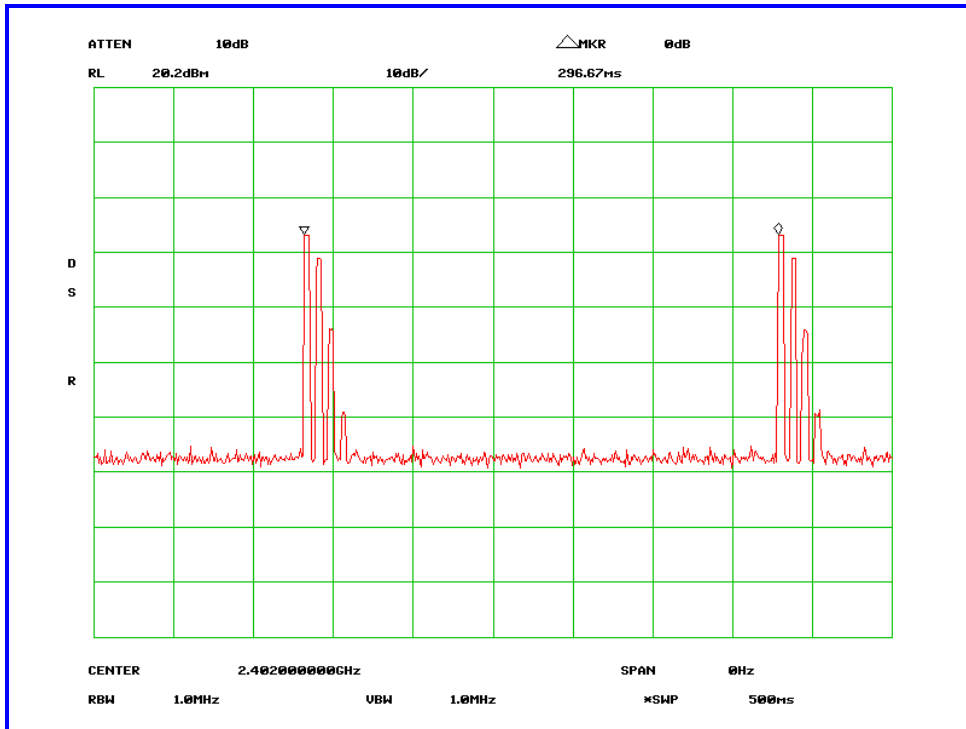
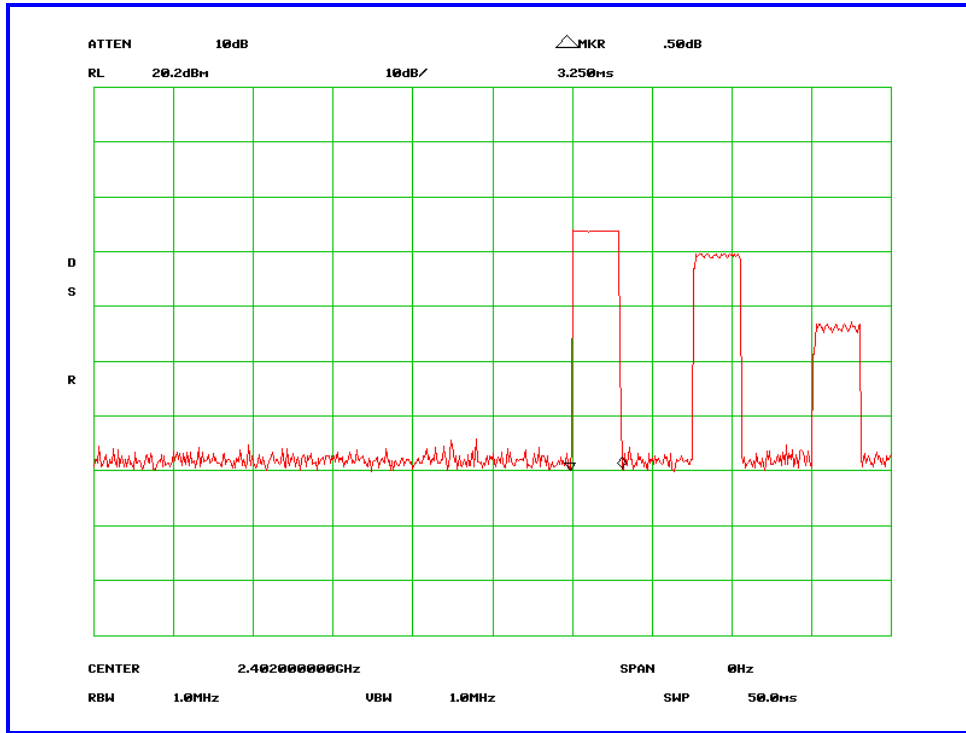


**SIEMIC, INC.**  
Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To: FCC 15.247: 2011 & RSS-210 Issue 8: 2010

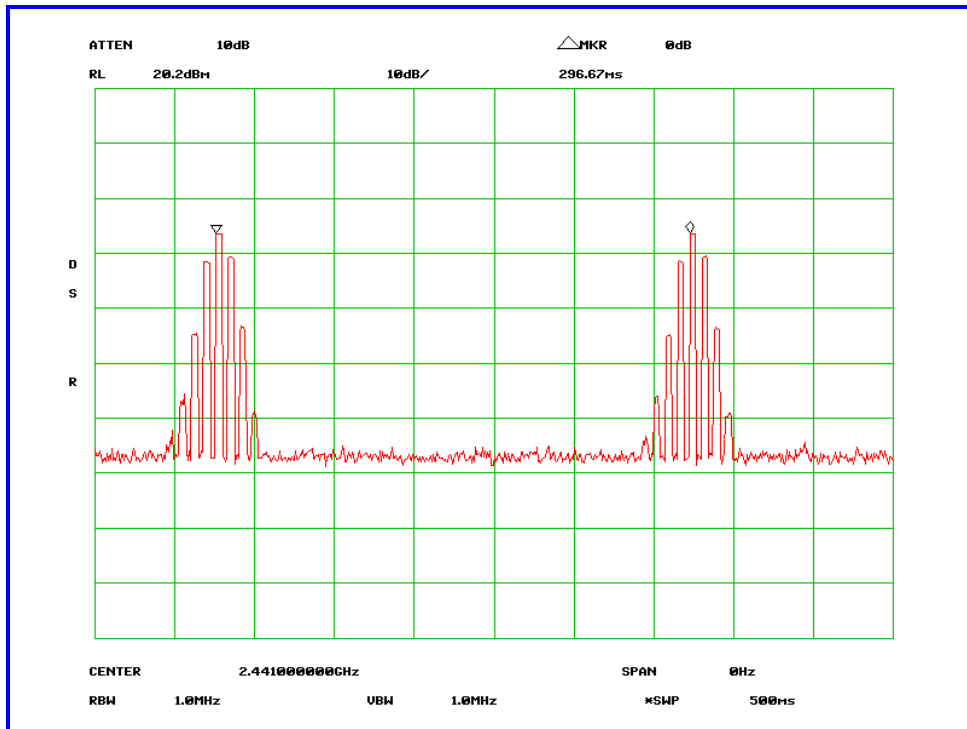
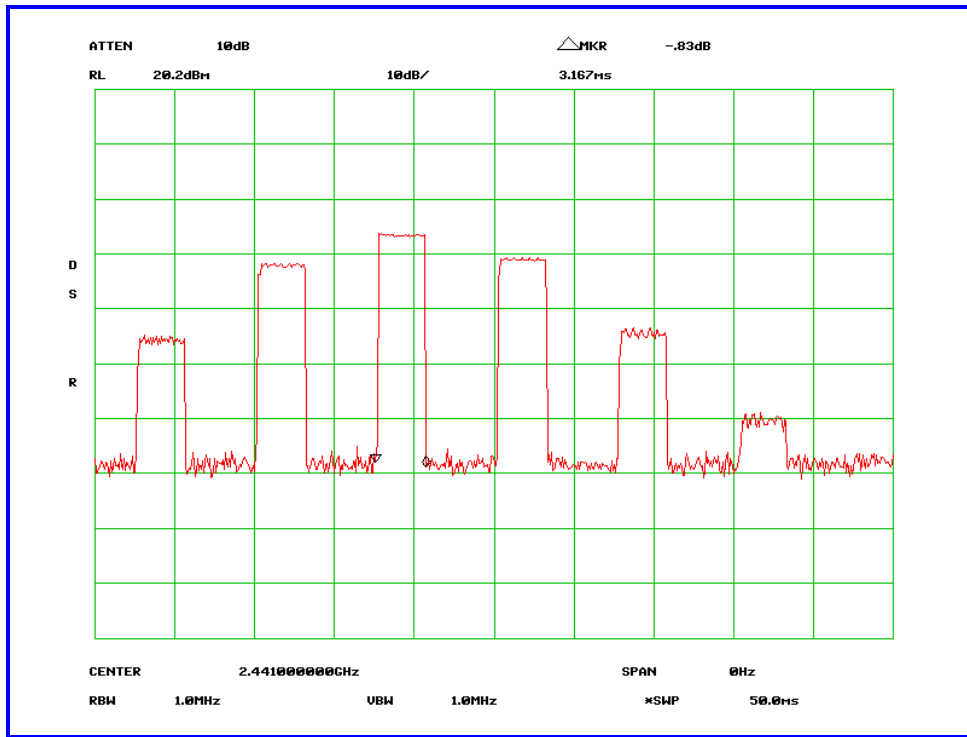
Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&I  
Issue Date November 03 2011  
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### Low Channel





### Middle Channel



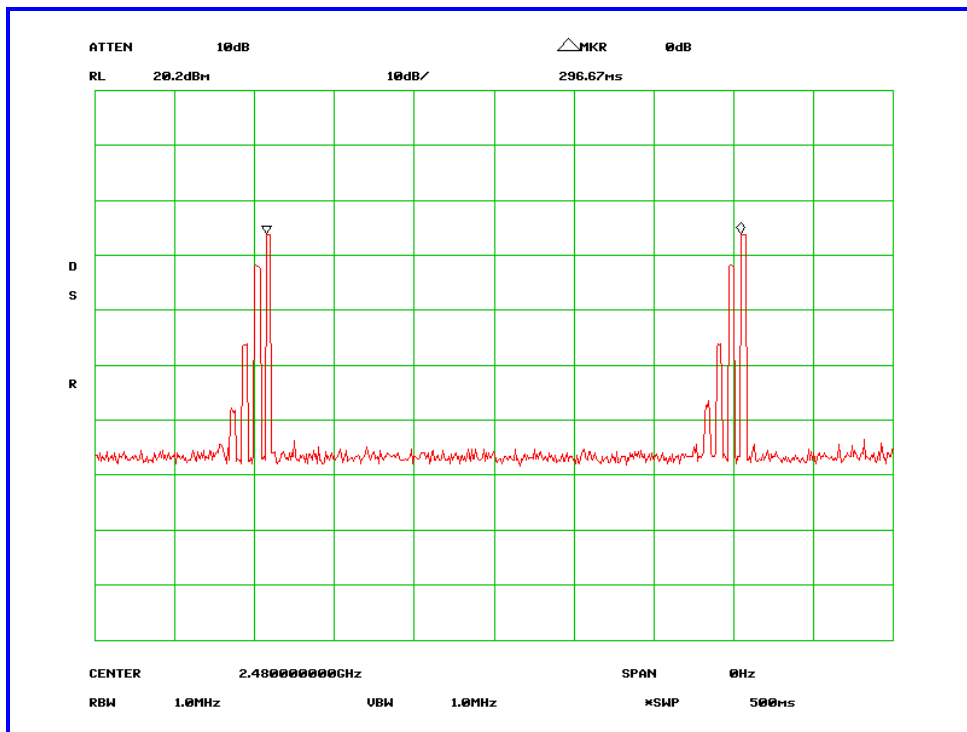
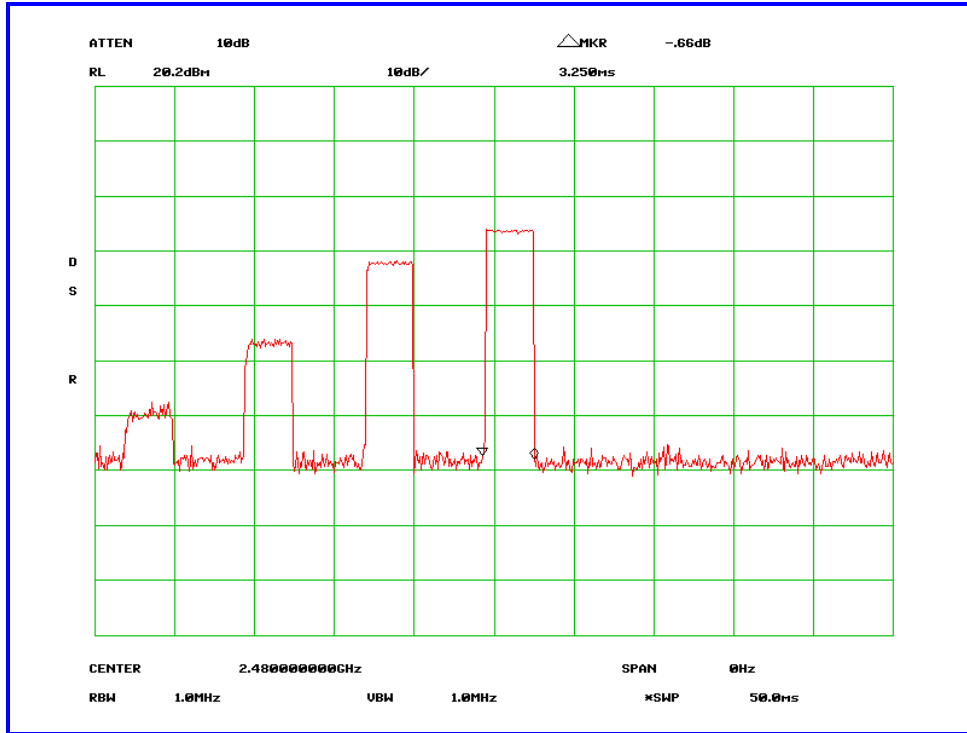


**SIEMIC, INC.**  
Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
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### High Channel



## 5.8 Peak Spectral Density

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
3. Environmental Conditions

|                      |     |
|----------------------|-----|
| Temperature          | N/A |
| Relative Humidity    | N/A |
| Atmospheric Pressure | N/A |
4. Test Date : N/A  
Tested By : N/A

**Standard Requirement:** 47 CFR §15.247(e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

**Procedures:** The Peak Spectral density measurement was taken conducted using a spectrum analyzer with average measurement method

RBW=3 KHz, VBW > RBW, Sweep time atuo

**Test Result:** N/A

## 5.9 Peak Output Power

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power. The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
3. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
4. Test Date : October 19 & 26 2011  
Tested By : Dan Corona

Standard Requirement: 47 CFR §15.247(b)

For all other frequency hopping systems in the 2400-2483.5band: 0.125 Watt.

**Procedures:** The peak output power was measured conducted using a spectrum analyzer at low, mid, and hi channels. Peak detector was set to measure the power output. The power is converted from watt to dBm, therefore, 1 watt = 30 dBm.

**Test Result:** Pass

### Operational Data Rate: 1 Mbps

| Channel | Channel Frequency (MHz) | Measured Output Power (dBm) | Peak Output Power Limit (dBm) |
|---------|-------------------------|-----------------------------|-------------------------------|
| Low     | 2402                    | 13.20                       | 30                            |
| Mid     | 2441                    | 13.37                       | 30                            |
| High    | 2480                    | 13.53                       | 30                            |

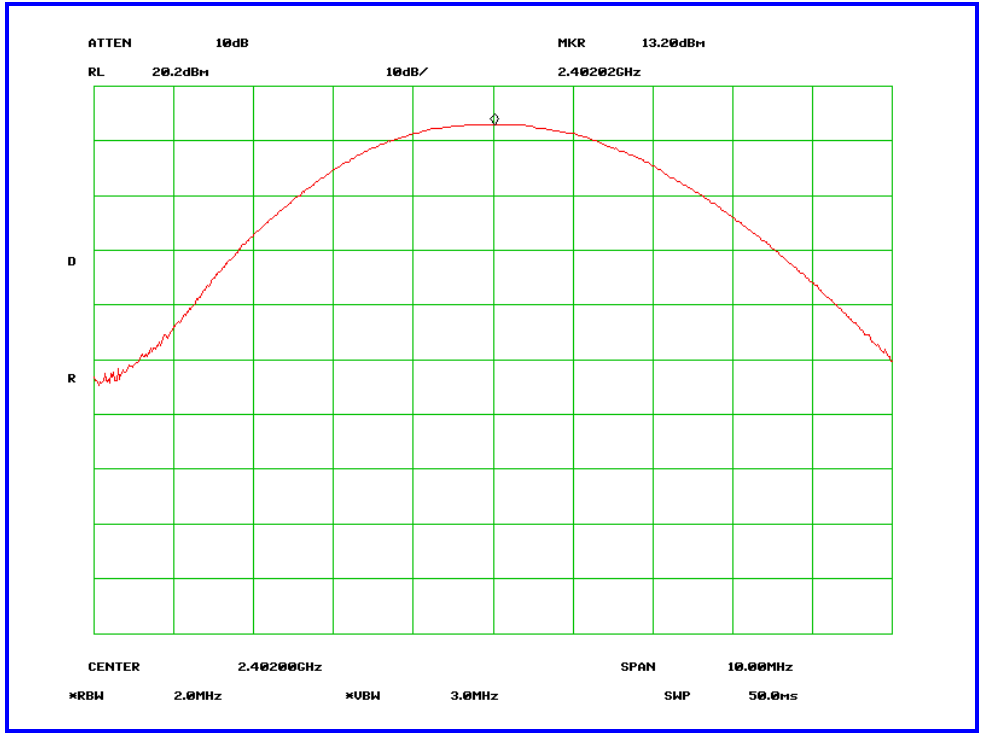
### Operational Data Rate: 2 Mbps

| Channel | Channel Frequency (MHz) | Measured Output Power (dBm) | Peak Output Power Limit (dBm) |
|---------|-------------------------|-----------------------------|-------------------------------|
| Low     | 2402                    | 14.37                       | 30                            |
| Mid     | 2441                    | 14.03                       | 30                            |
| High    | 2480                    | 13.87                       | 30                            |

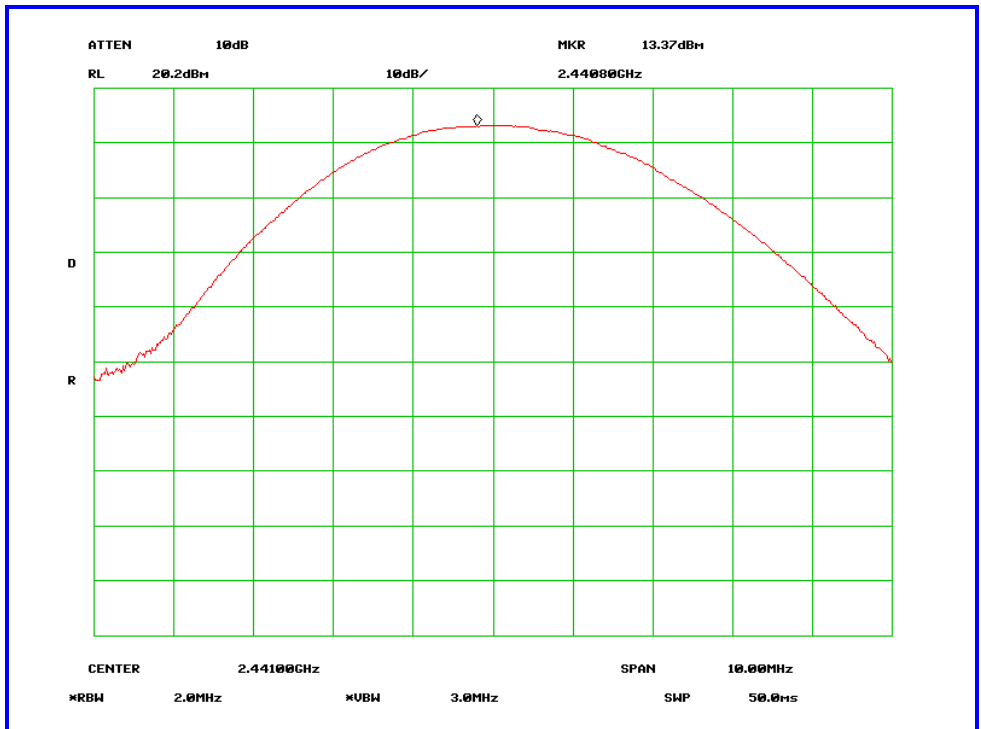
### Operational Data Rate: 3 Mbps

| Channel | Channel Frequency (MHz) | Measured Output Power (dBm) | Peak Output Power Limit (dBm) |
|---------|-------------------------|-----------------------------|-------------------------------|
| Low     | 2402                    | 14.53                       | 30                            |
| Mid     | 2441                    | 14.20                       | 30                            |
| High    | 2480                    | 14.20                       | 30                            |

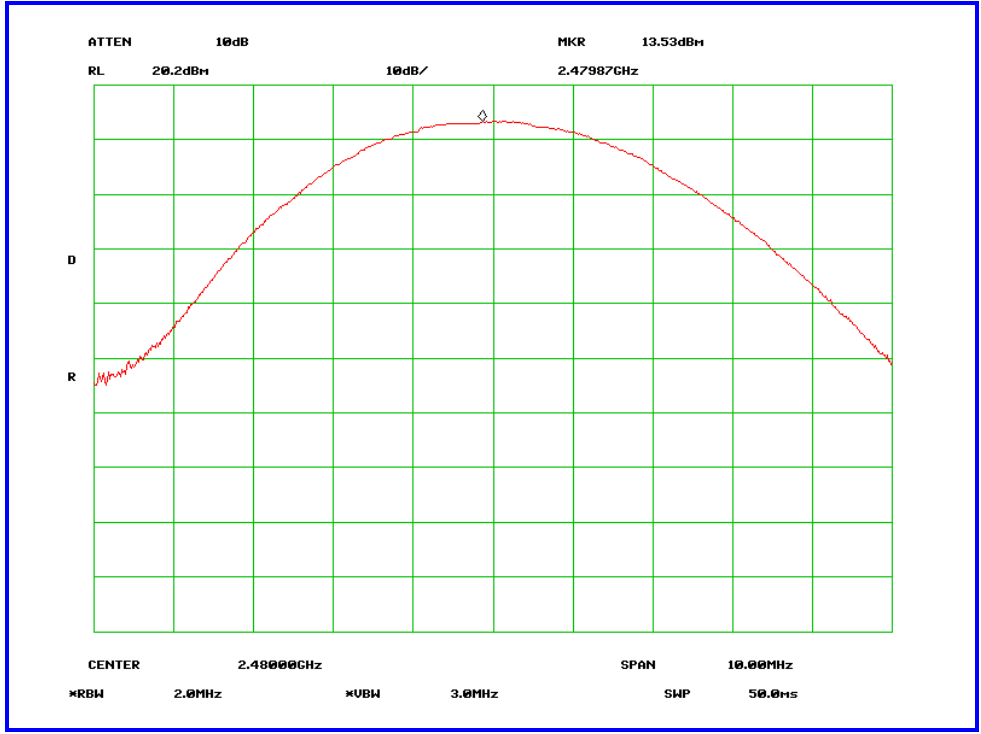
**Low Channel - Data Rate: 1 Mbps (Peak Output Power)**



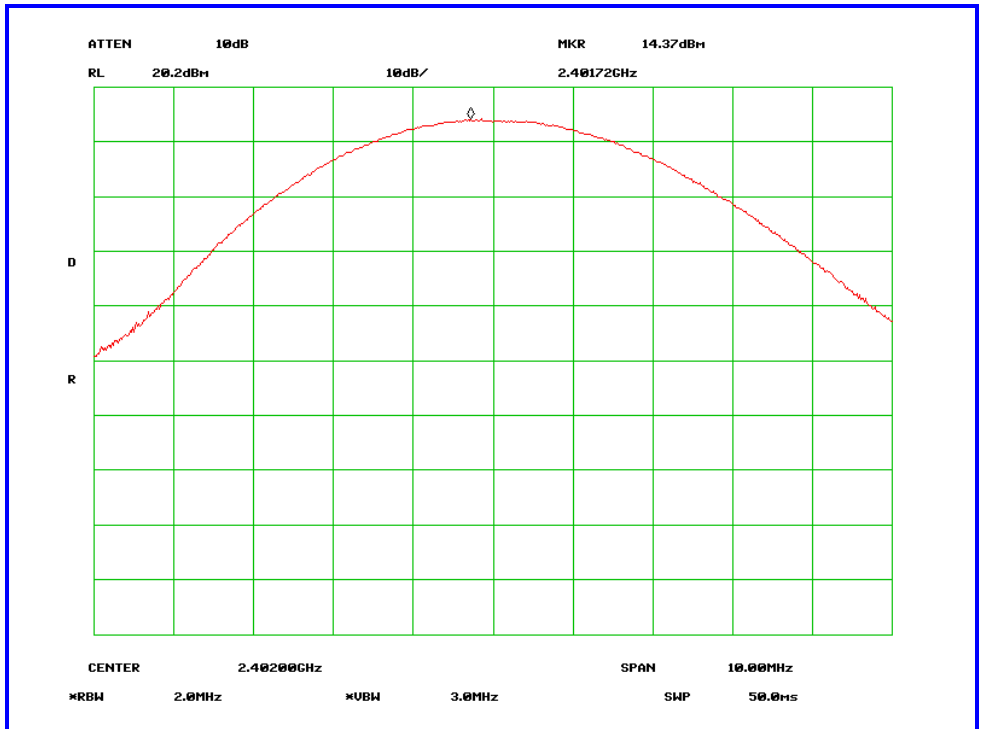
**Middle Channel - Data Rate: 1 Mbps (Peak Output Power)**



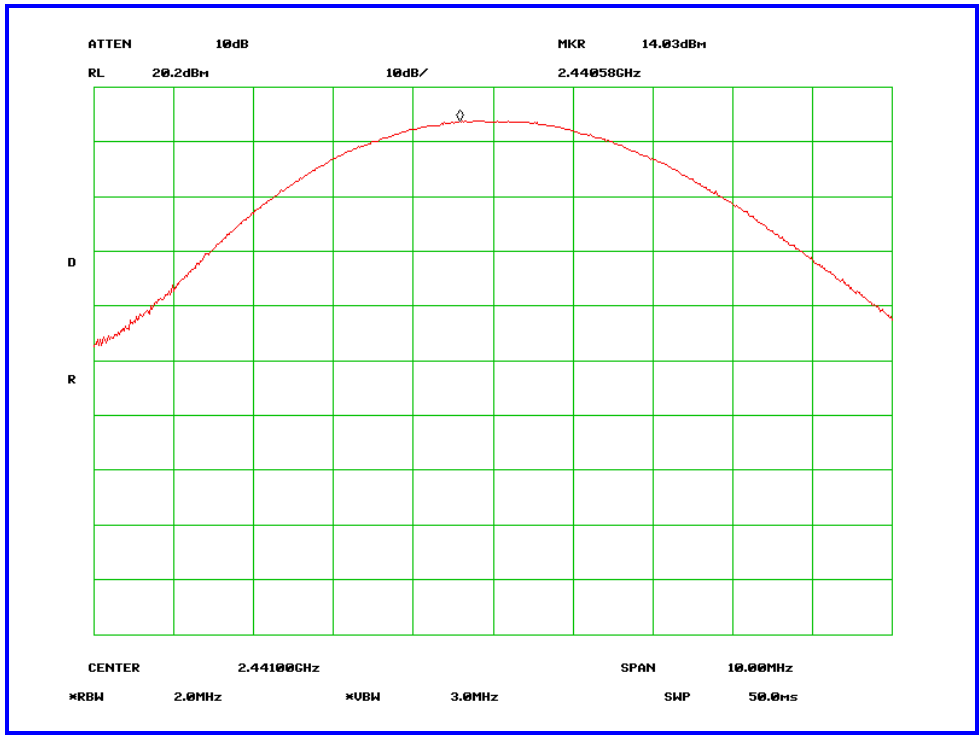
### High Channel - Data Rate: 1 Mbps (Peak Output Power)



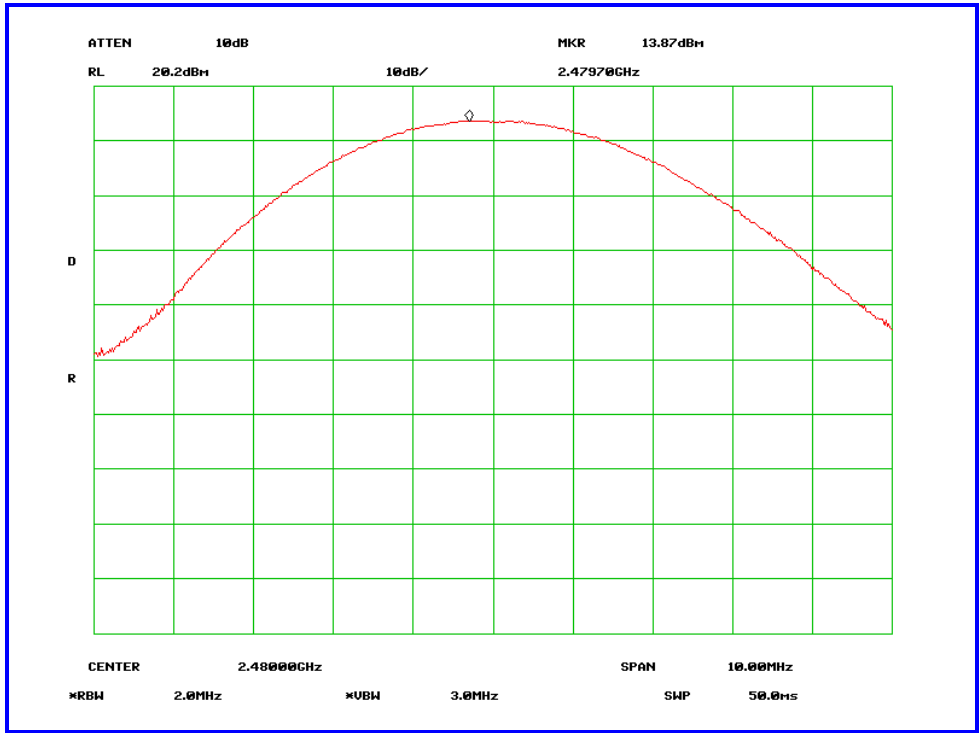
### Low Channel - Data Rate: 2 Mbps (Peak Output Power)



**Middle Channel - Data Rate: 2 Mbps (Peak Output Power)**

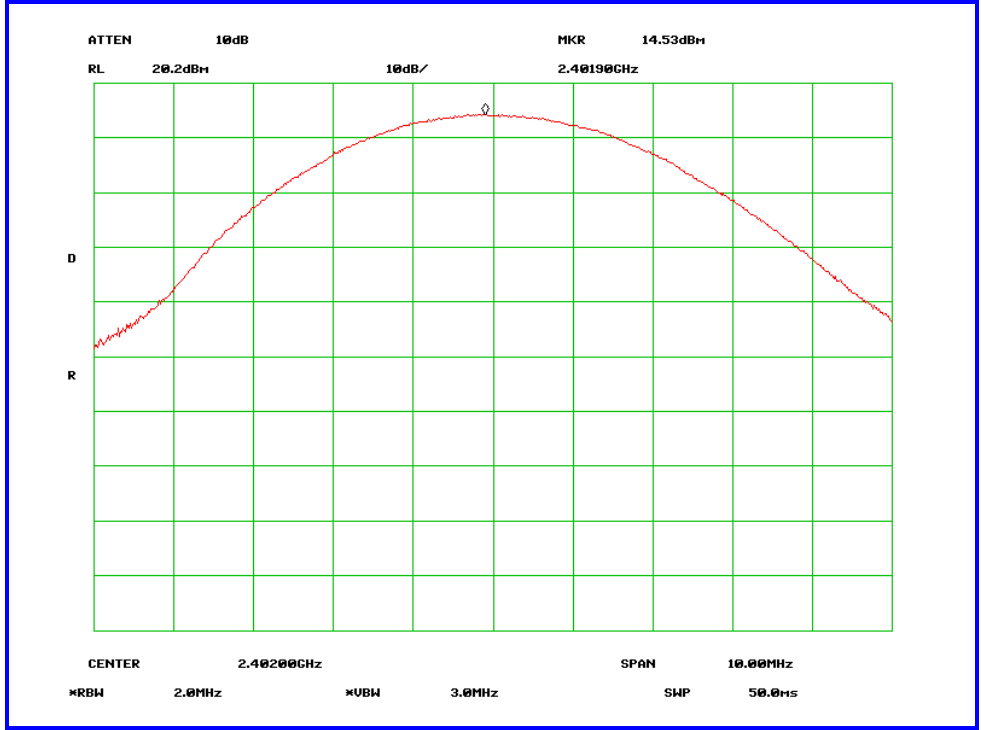


**High Channel - Data Rate: 2 Mbps (Peak Output Power)**

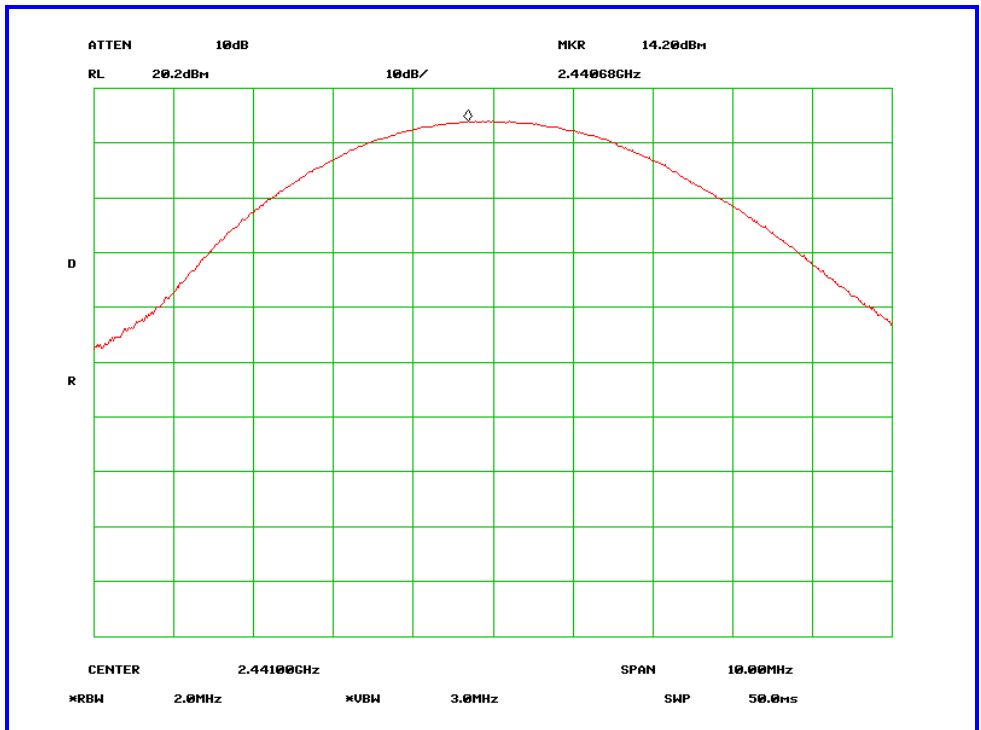




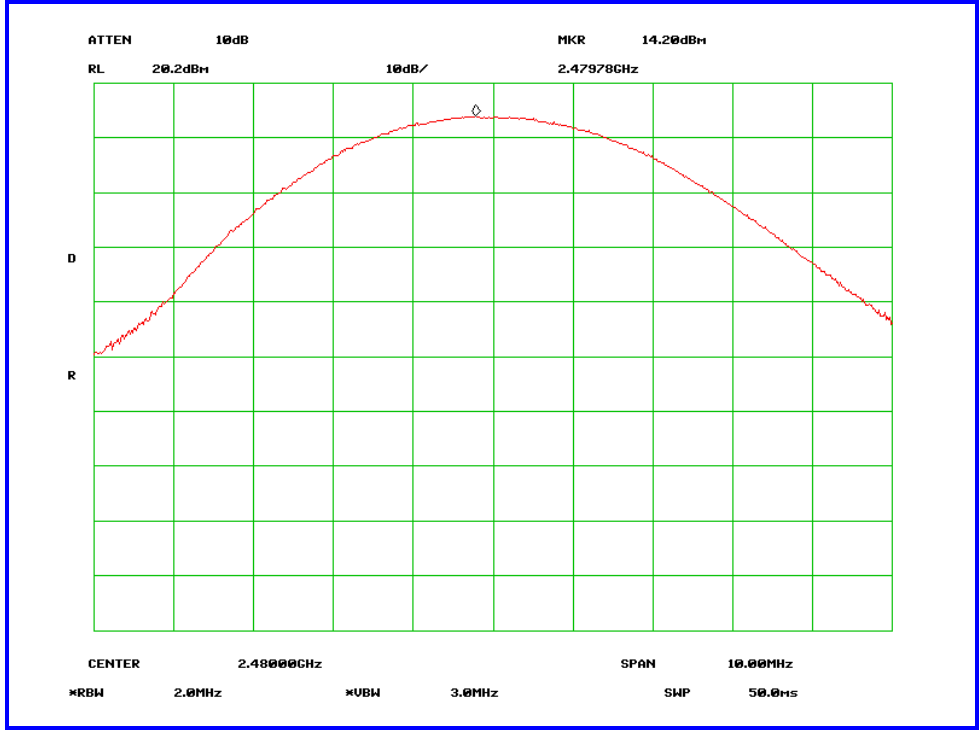
**Low Channel - Data Rate: 3 Mbps (Peak Output Power)**



**Middle Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



**High Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



## **5.10 Antenna Port Emission**

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
3. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
4. Test Date : October 19 & 26 2011  
Tested By : Dan Corona

**Standard Requirement:** 47 CFR §15.247(d)

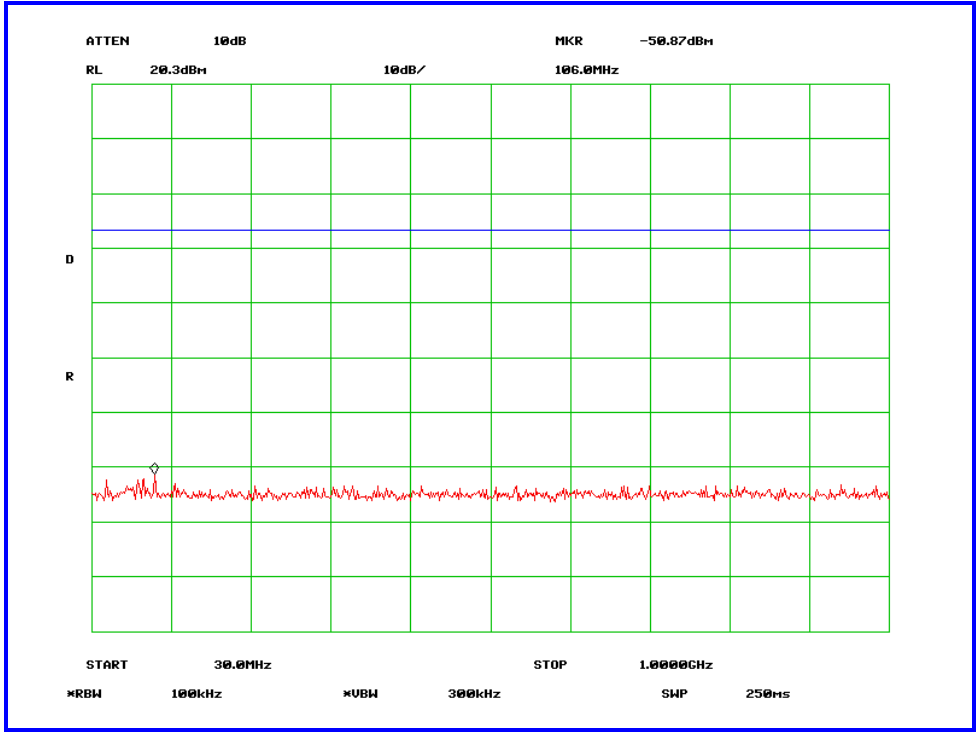
Radiated emission limits: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

**Procedures:** The conducted spurious emissions were measured conducted using a spectrum analyzer at low, mid, and hi channels. The limit was determined by attenuating 20 dB of the RF peak power output

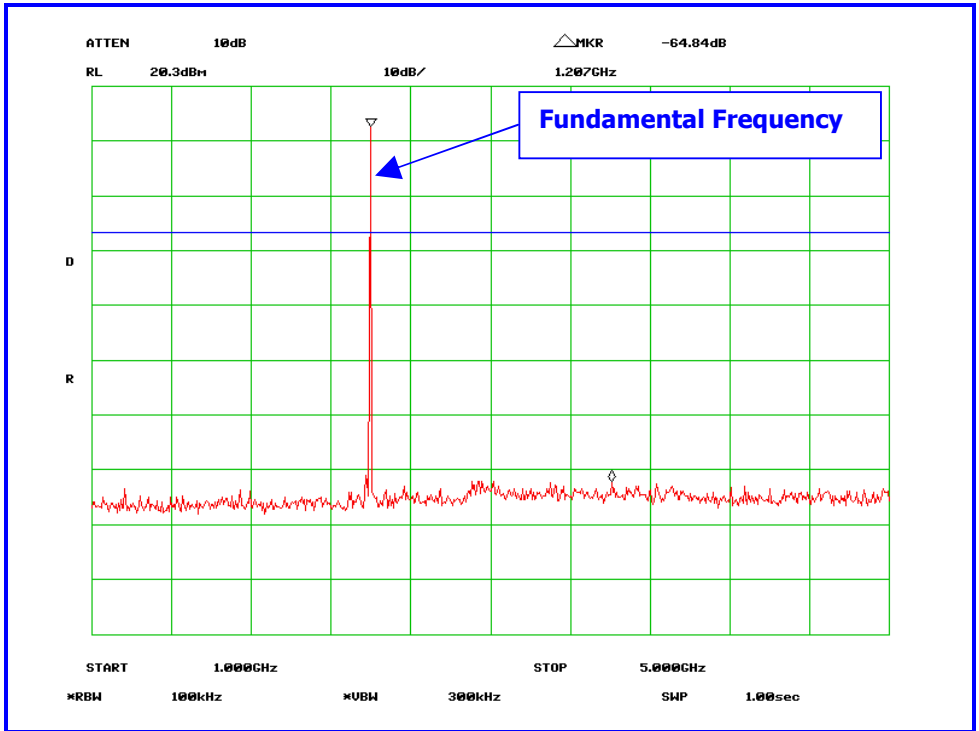
**Test Result:** Pass

Refer to the attached plots.

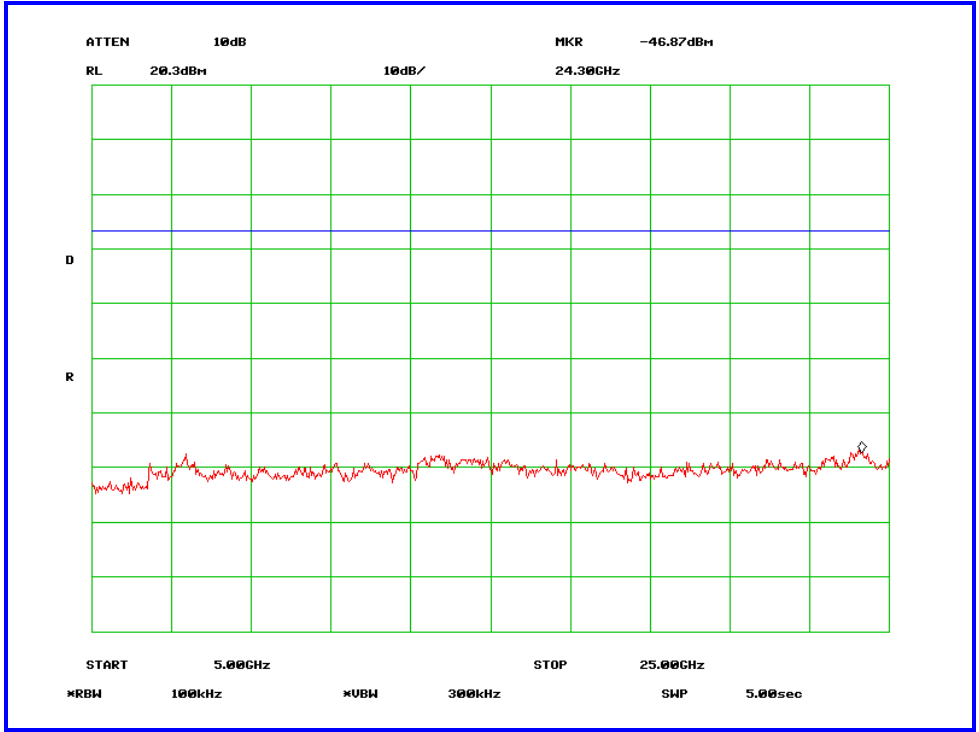
**Low Channel - Data Rate: 1 Mbps (Emission @ Antenna Port)**



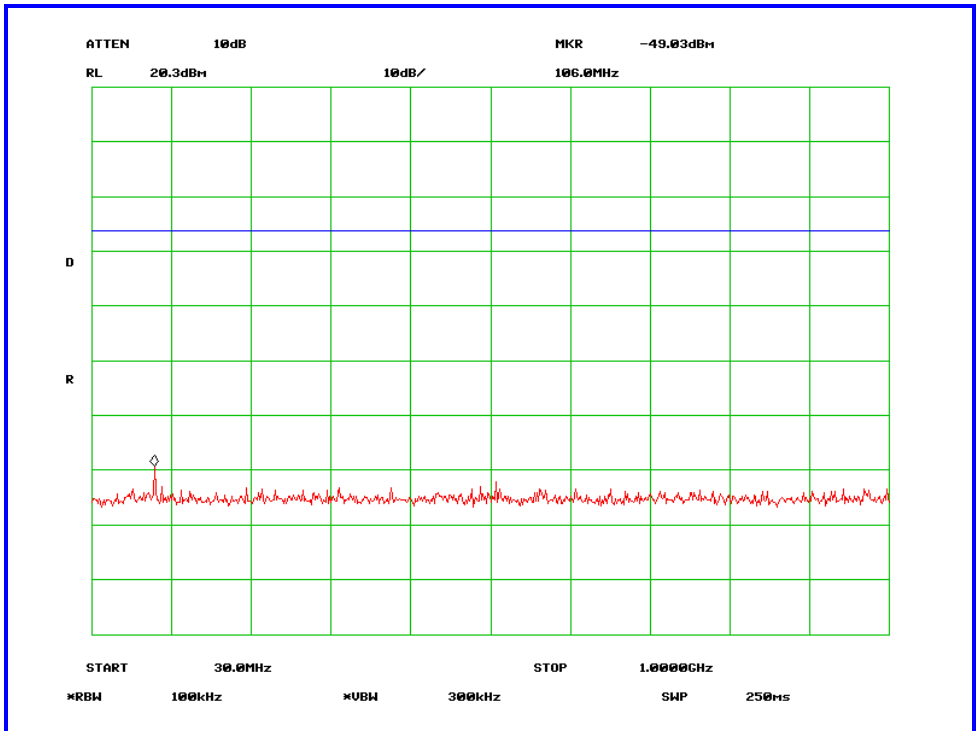
**Low Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



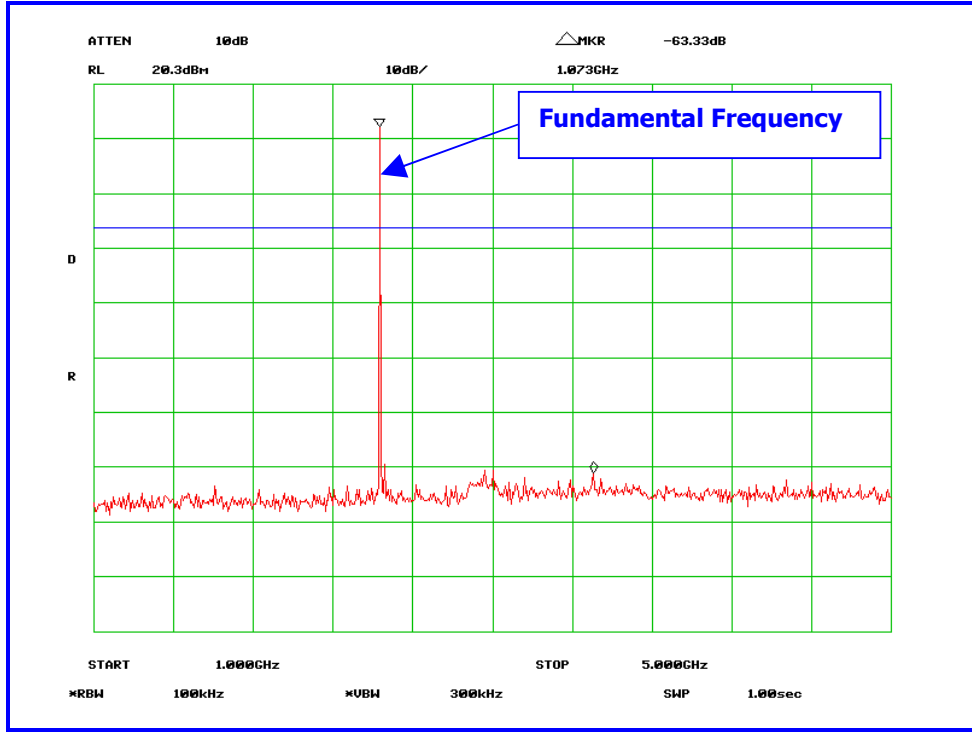
**Low Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



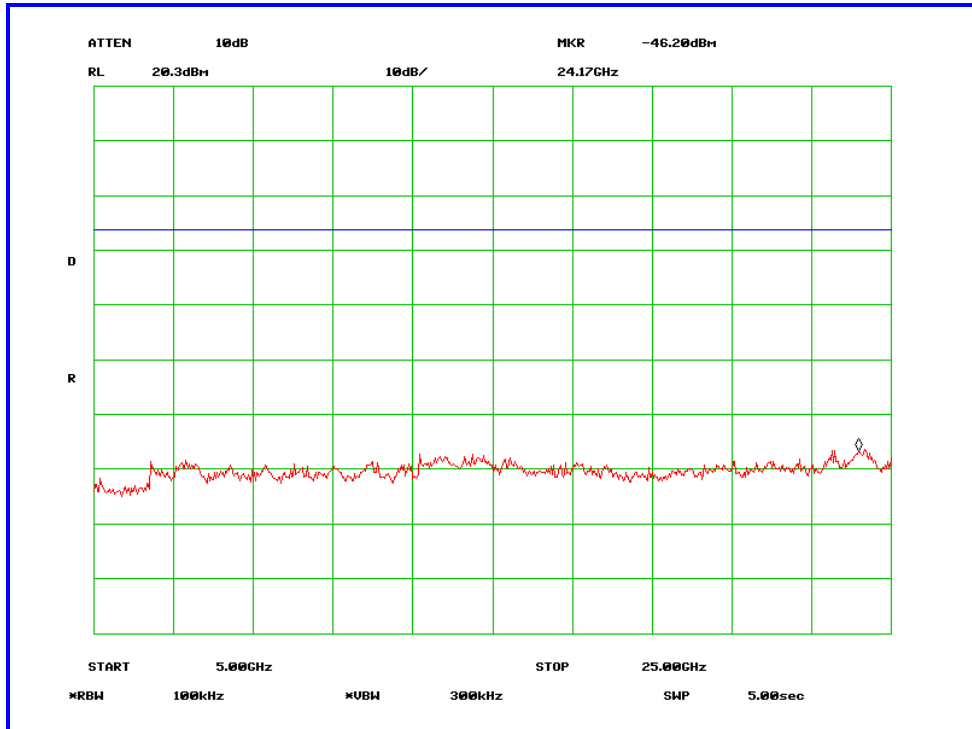
**Middle Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



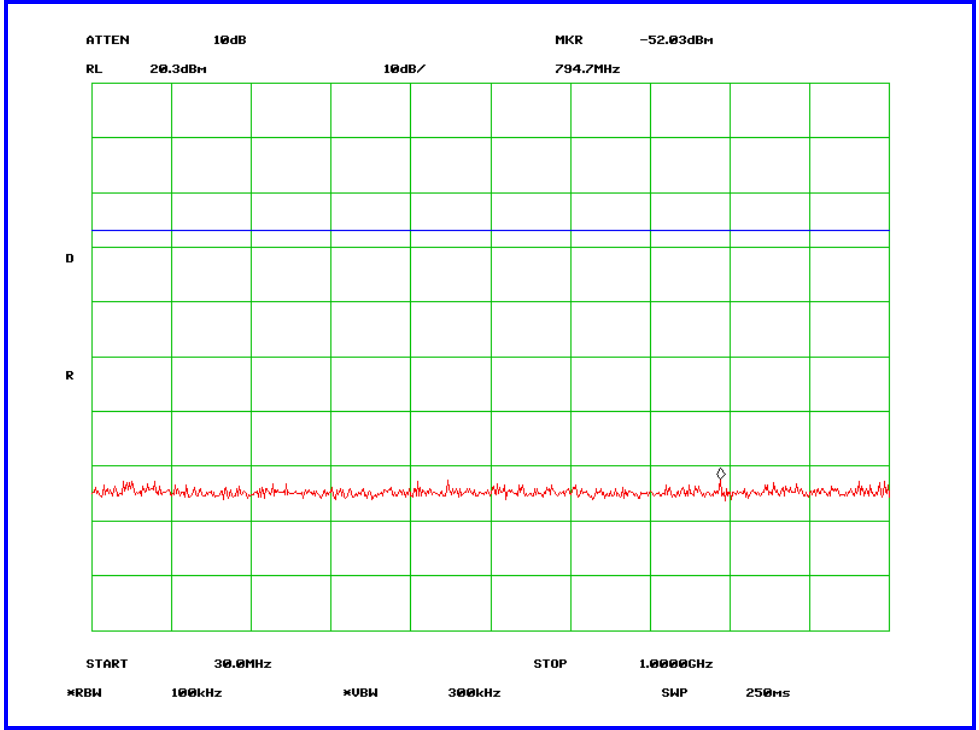
**Middle Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



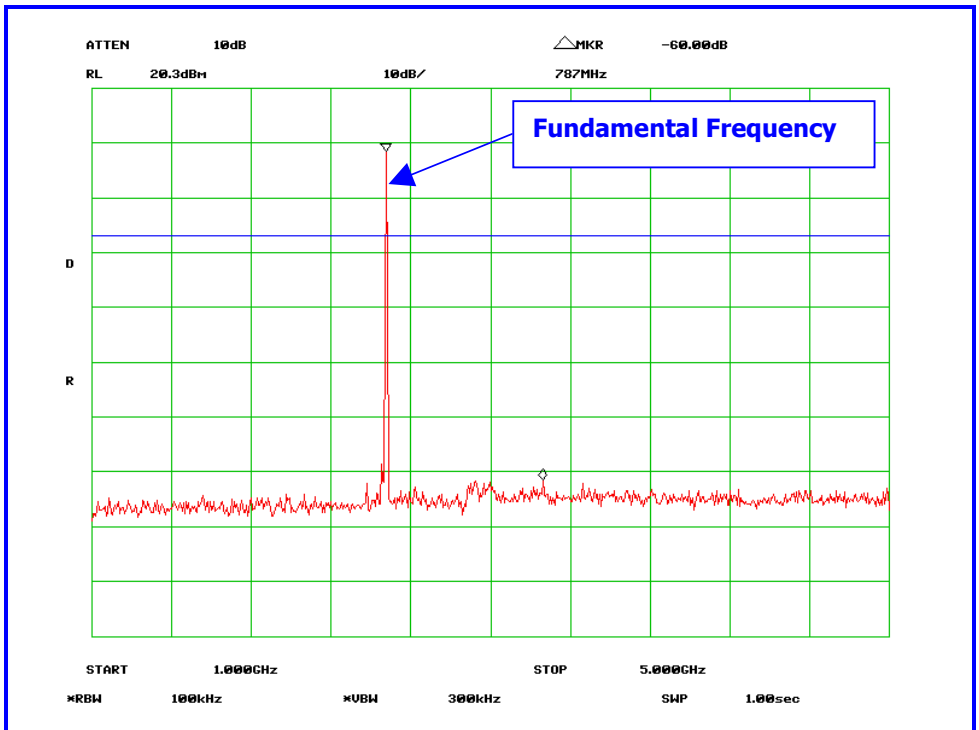
**Middle Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



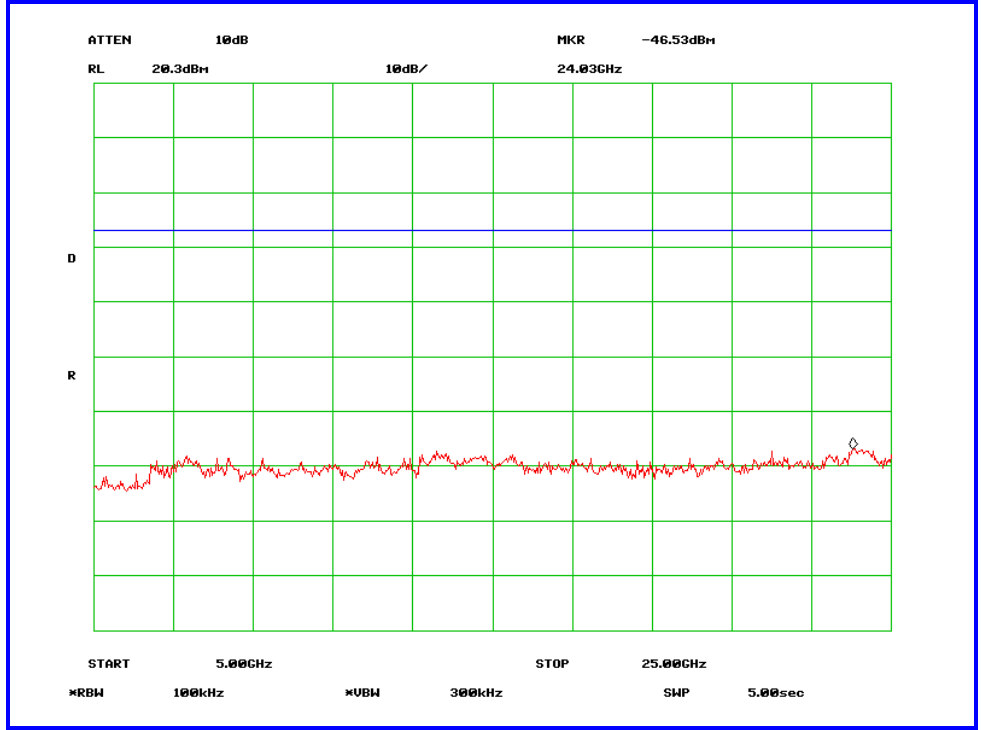
**High Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



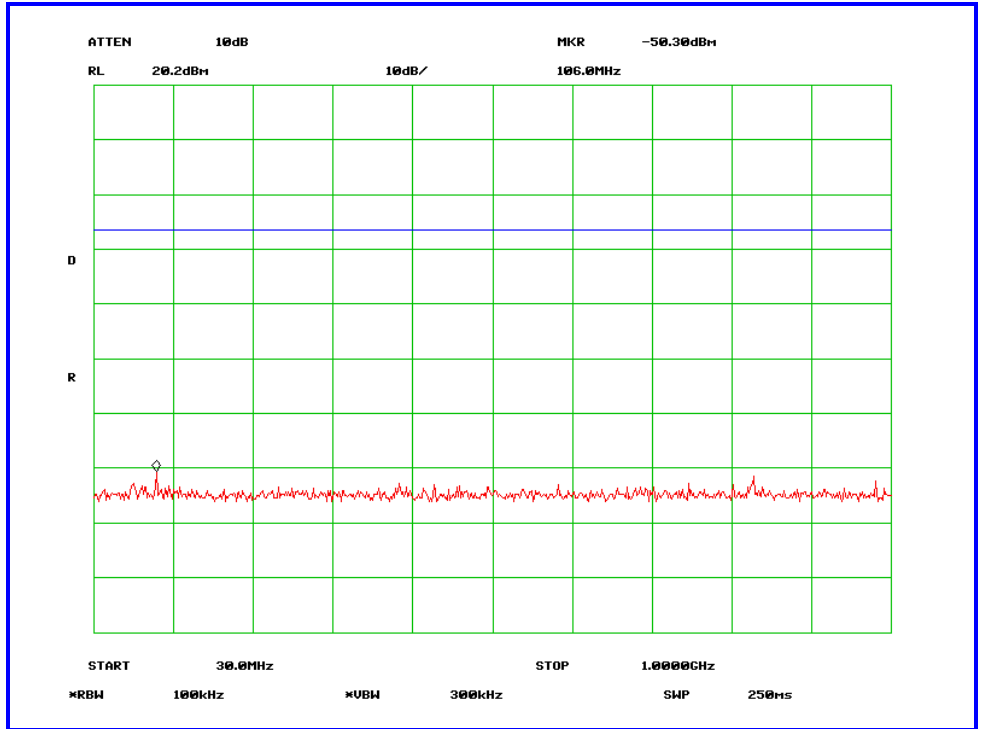
**High Channel - Data Rate: 1 Mbps (Emission @ Antenna port)**



### High Channel - Data Rate: 1 Mbps (Emission @ Antenna port)

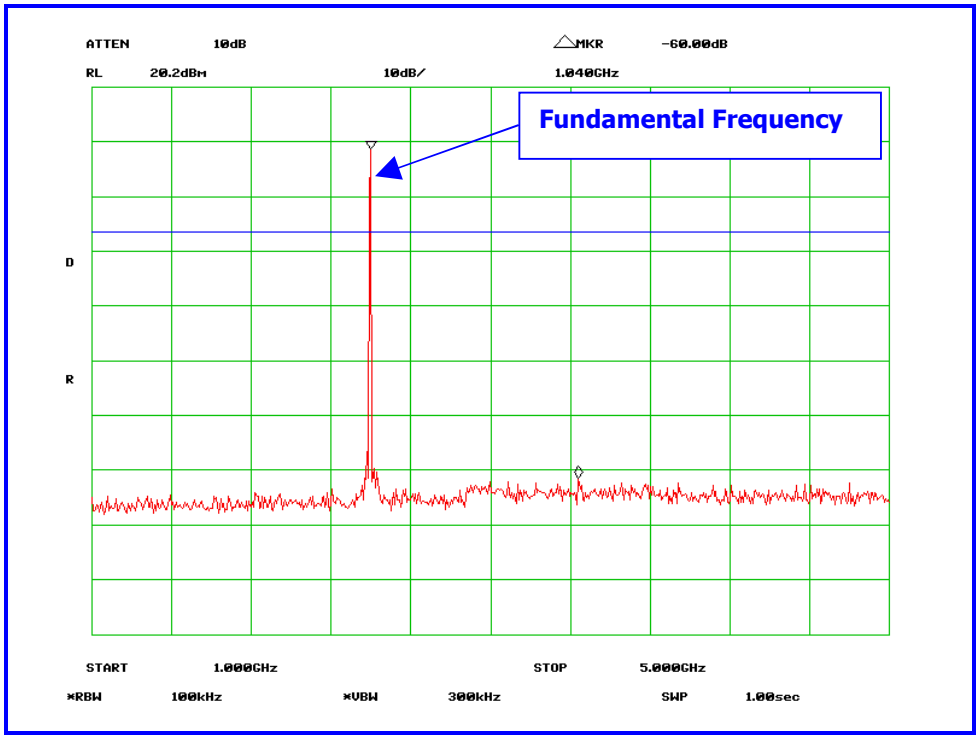


### Low Channel - Data Rate: 2 Mbps (Emission @ Antenna Port)

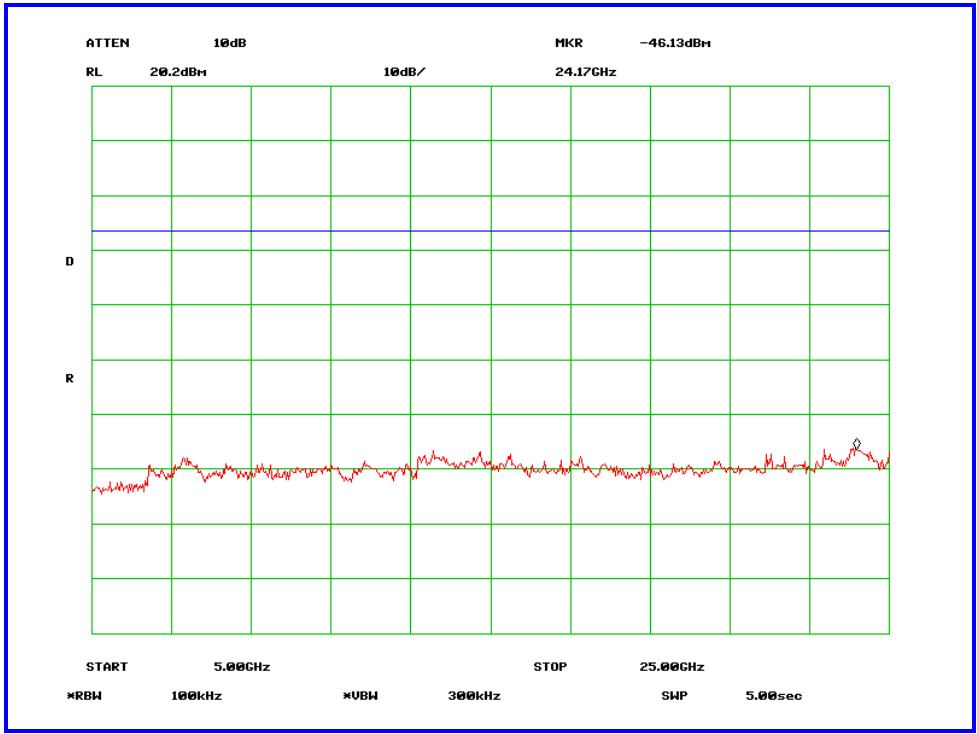




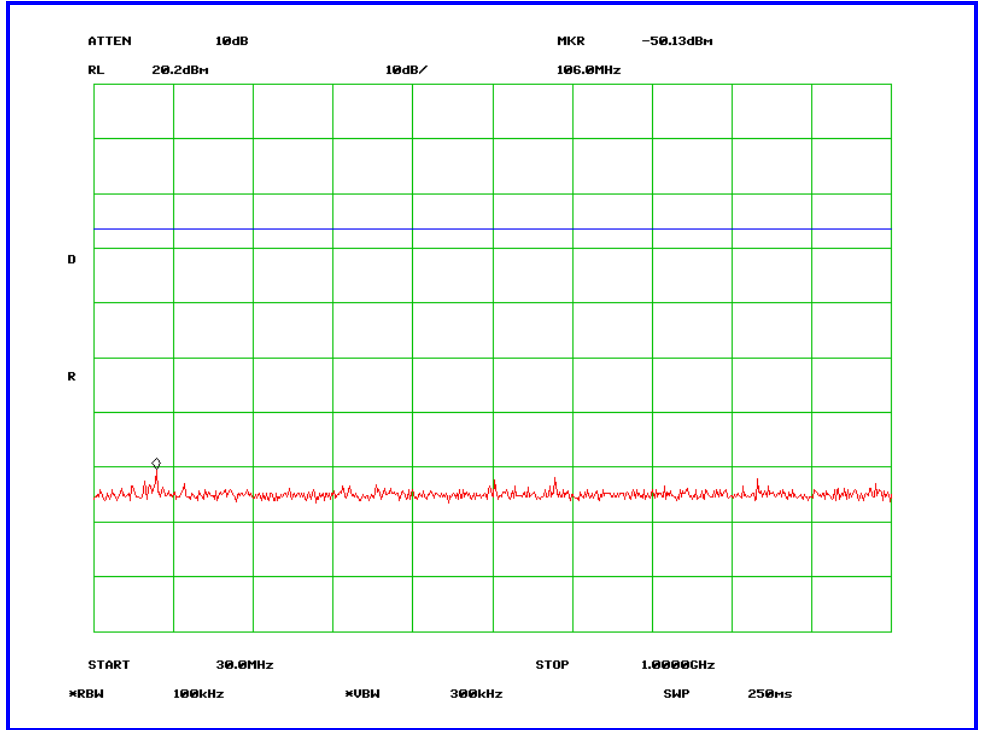
**Low Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



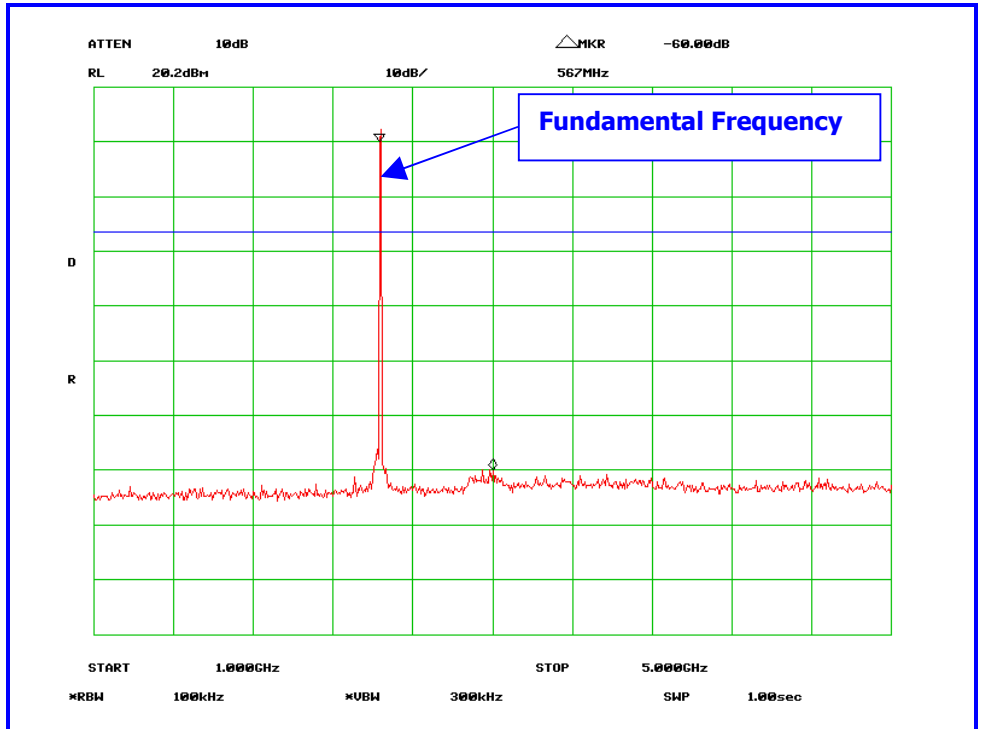
**Low Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



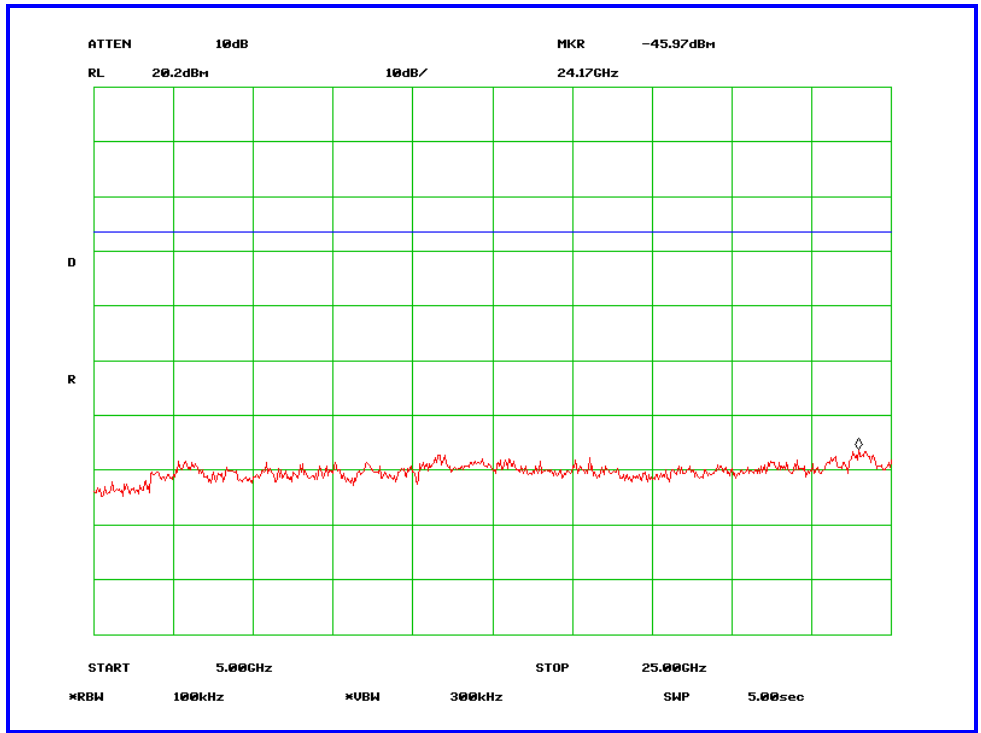
**Middle Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



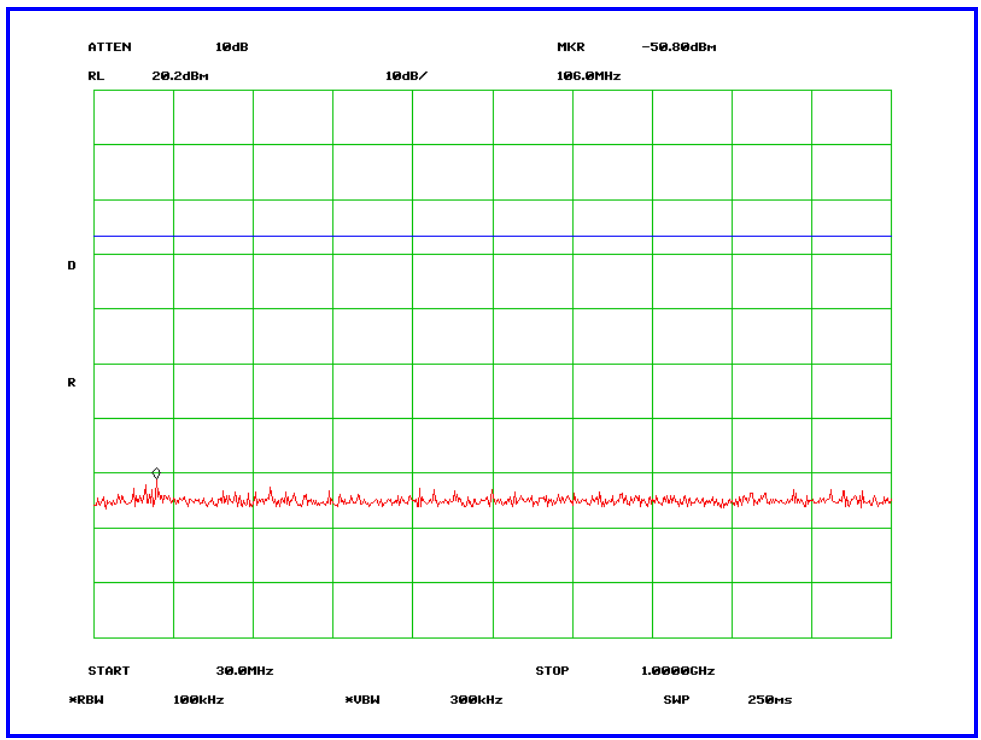
**Middle Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



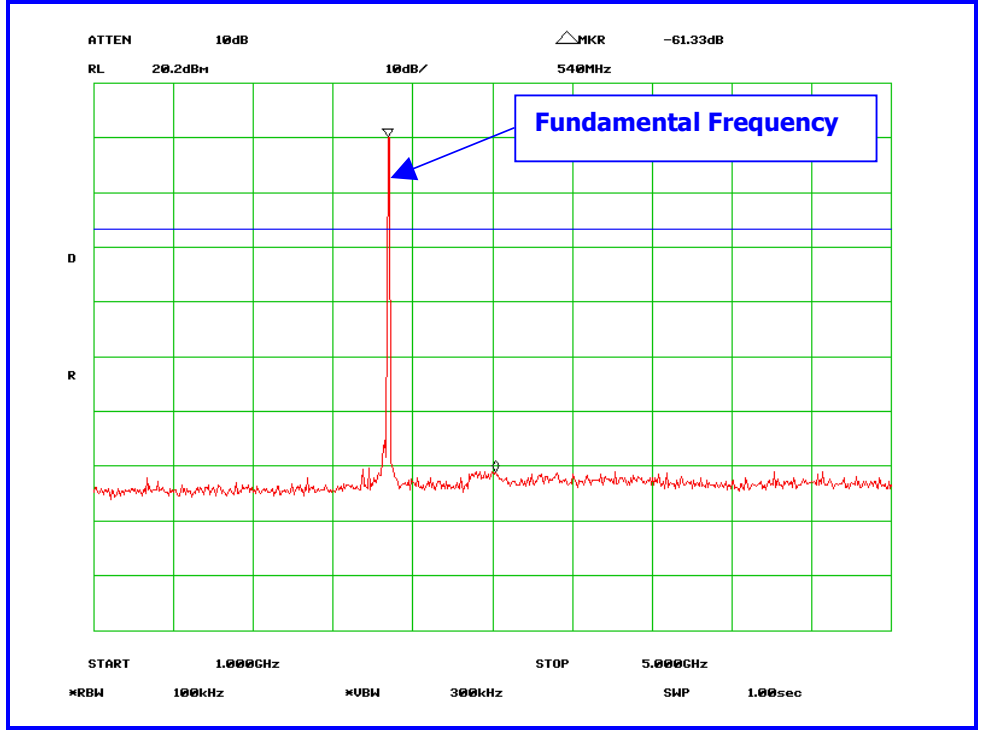
**Middle Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



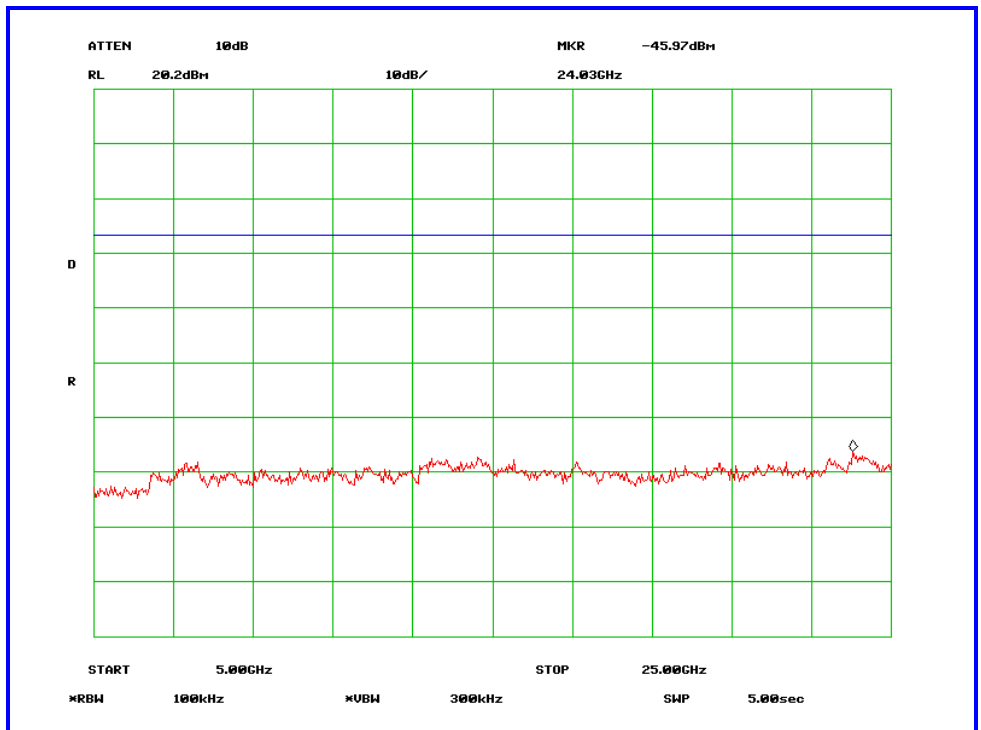
**High Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



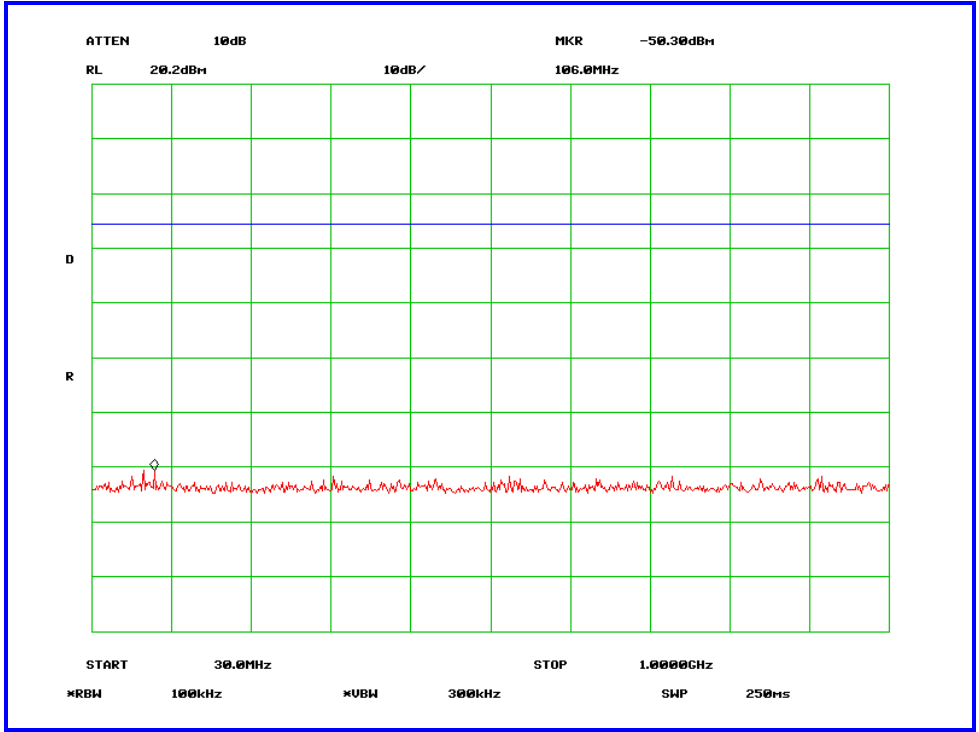
**High Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



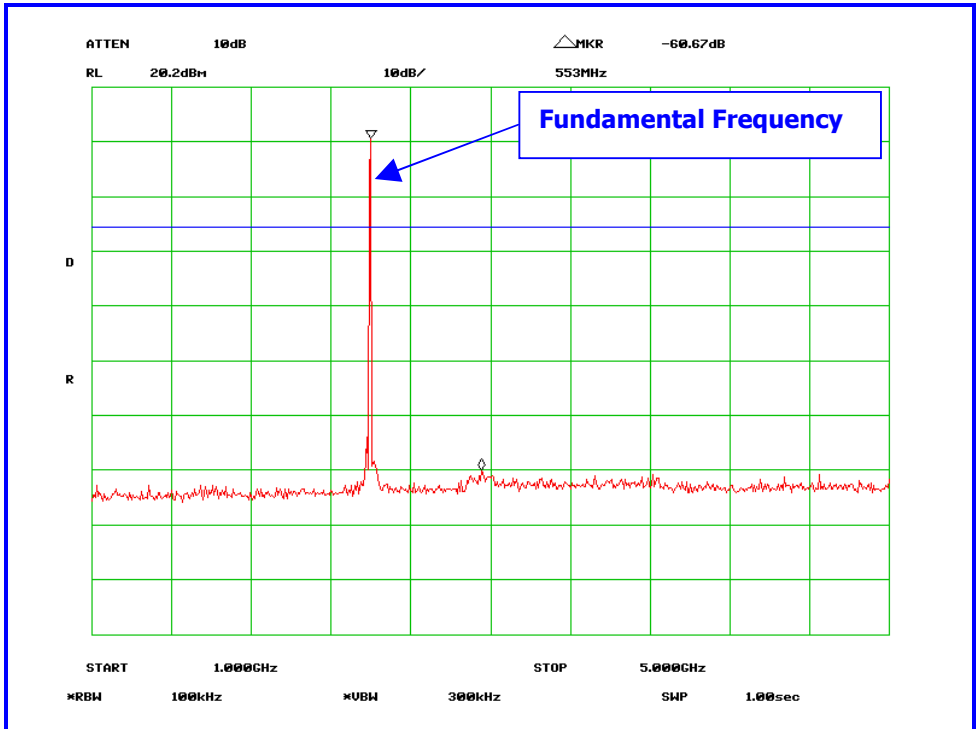
**High Channel - Data Rate: 2 Mbps (Emission @ Antenna port)**



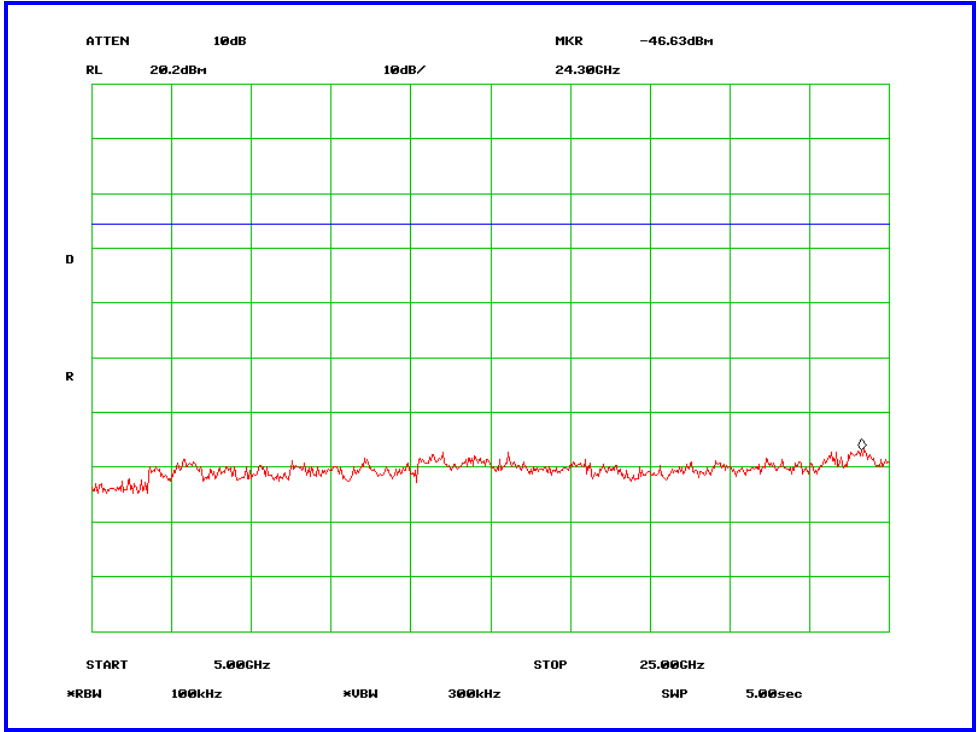
**Low Channel - Data Rate: 3 Mbps (Emission @ Antenna Port)**



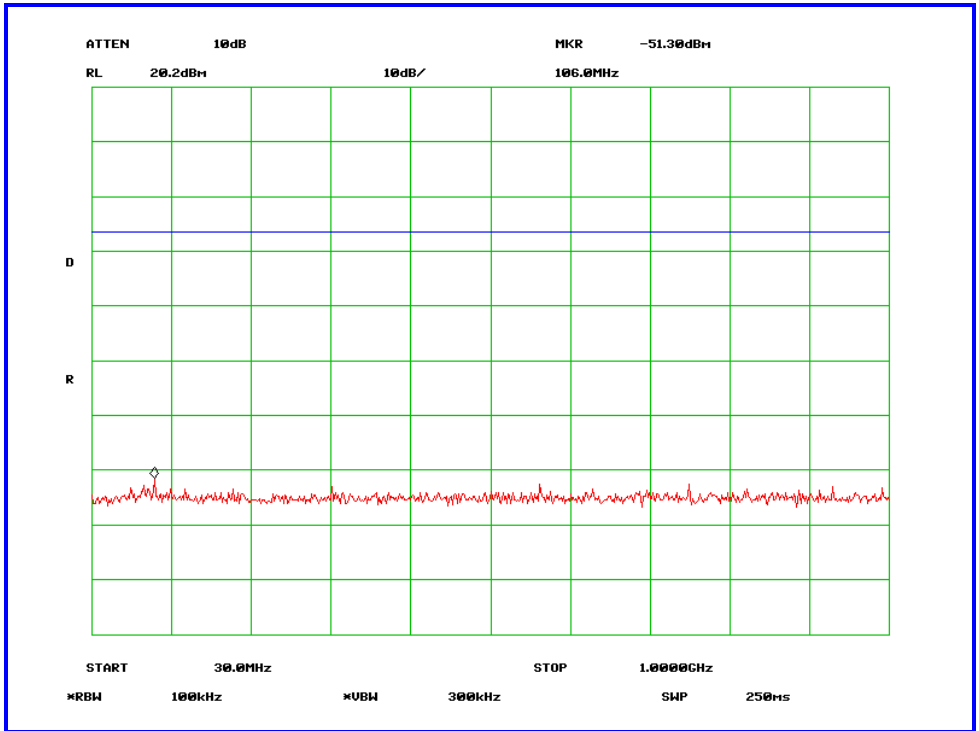
**Low Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



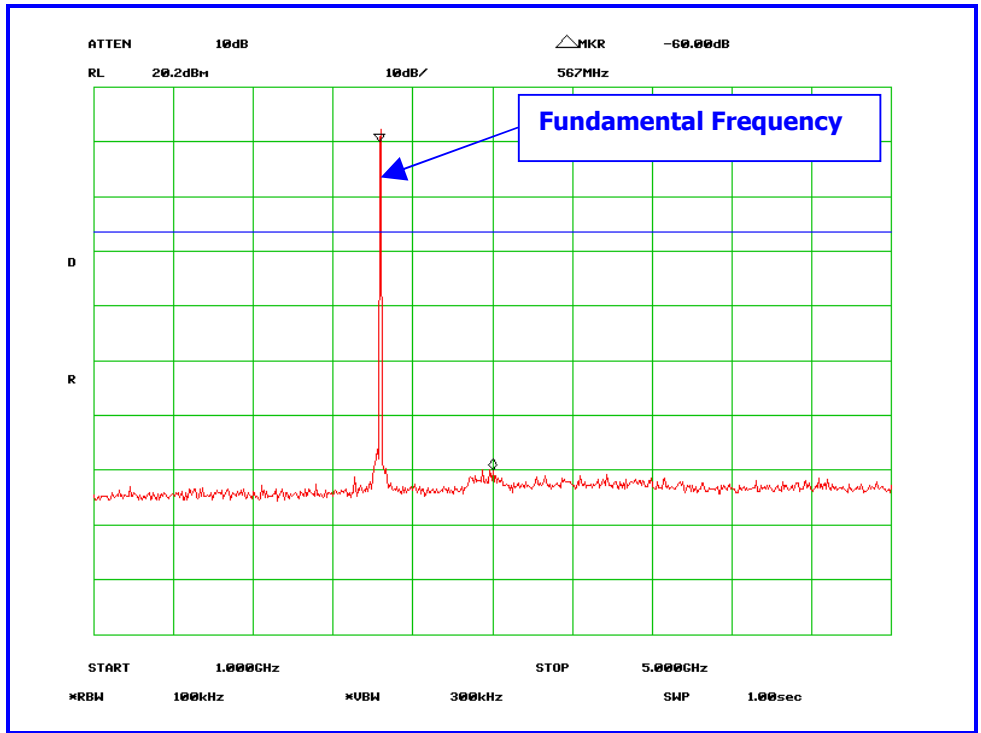
**Low Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



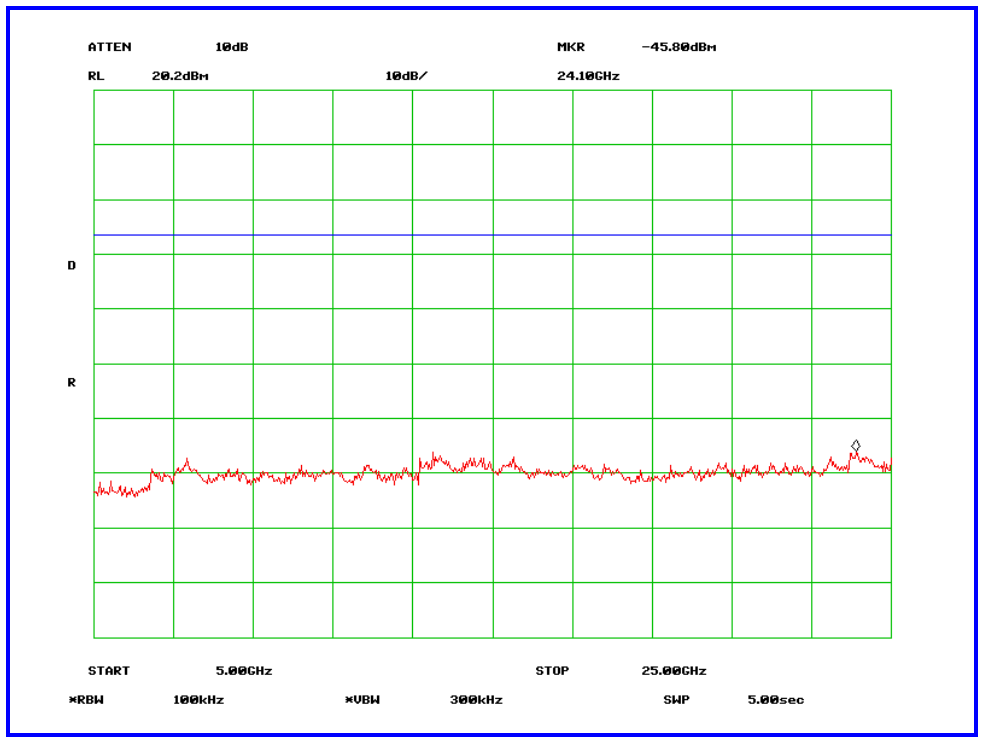
**Middle Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



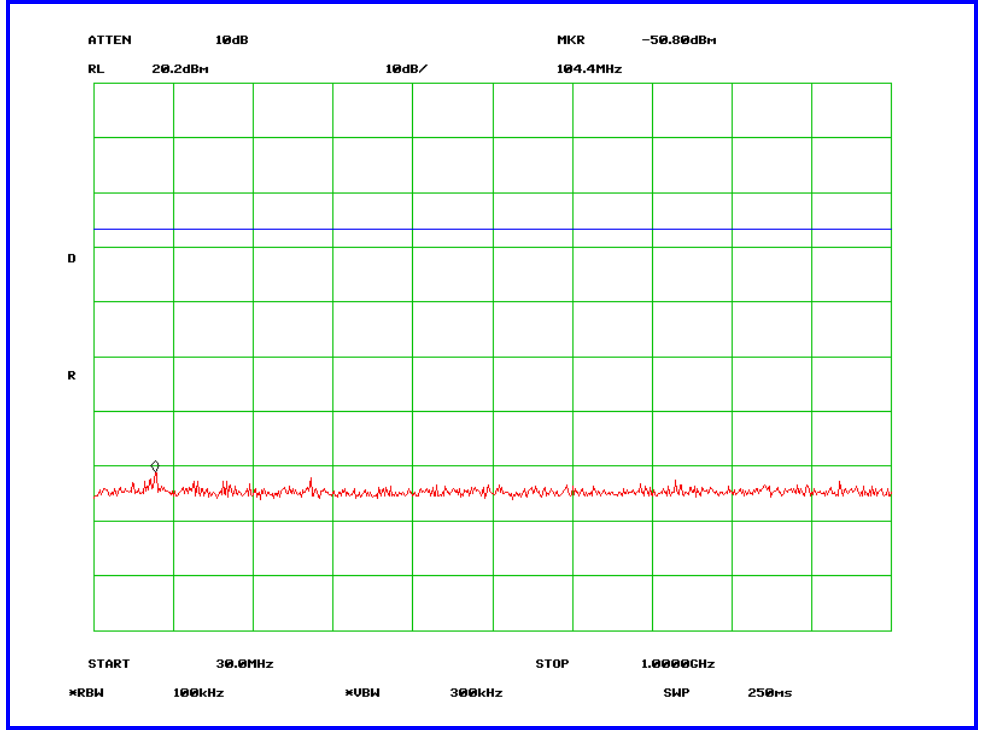
**Middle Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



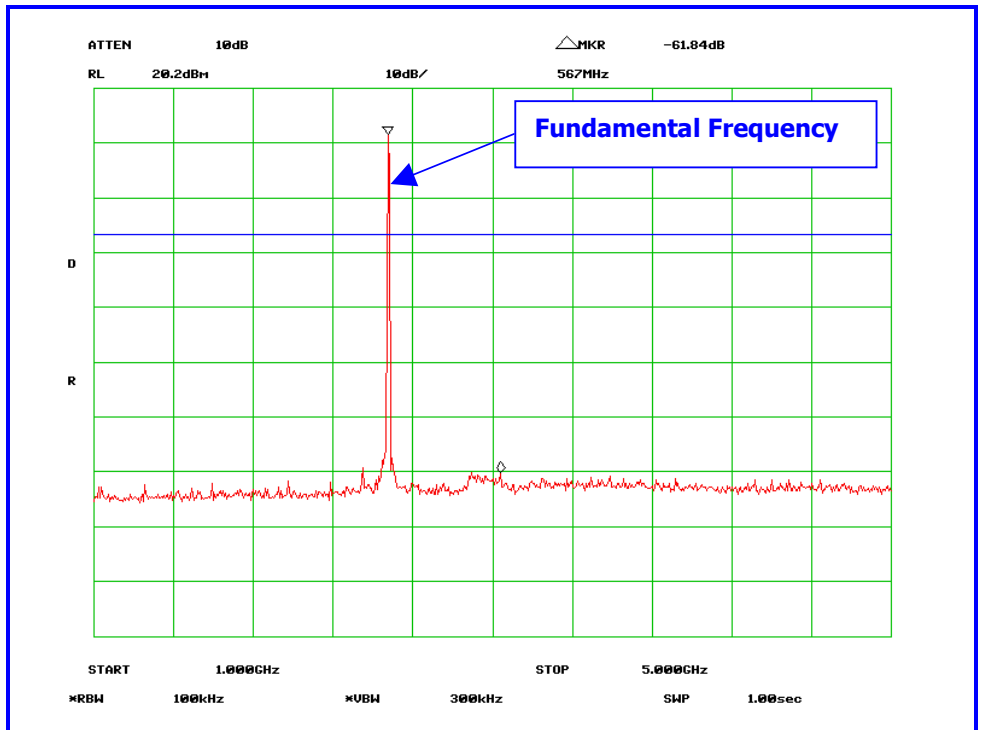
**Middle Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



**High Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**



**High Channel - Data Rate: 3 Mbps (Emission @ Antenna port)**







## 5.11 Radiated Spurious Emission < 1GHz

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz (QP only @ 3m & 10m) is +6.0dB (for EUTs < 0.5m X 0.5m X 0.5m).
4. Environmental Conditions
 

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |

Test Date : October 19 & 26 2011  
Tested By : Dan Corona

**Standard Requirement:** 47 CFR §15.247(d)

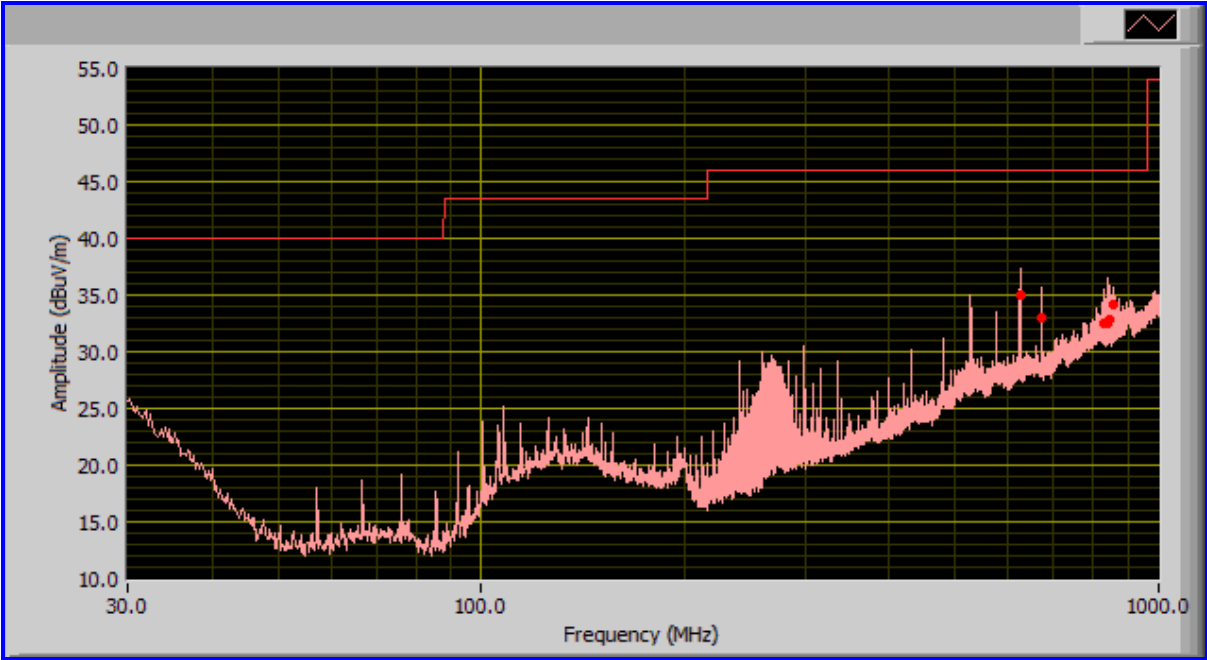
**Procedures:** Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set to transmit at mid channel. Note that setting the channel other than middle, the spurious emissions are the same.

The limit is converted from microvolts/meter to decibel microvolts/meter.

Sample Calculation: Corrected Amplitude = Raw Amplitude (dBμV/m) + ACF (dB) + Cable Loss (dB)

**Test Result:** Pass

**Radiated Emissions: TX Mode (1D Scanner + Bluetooth)**

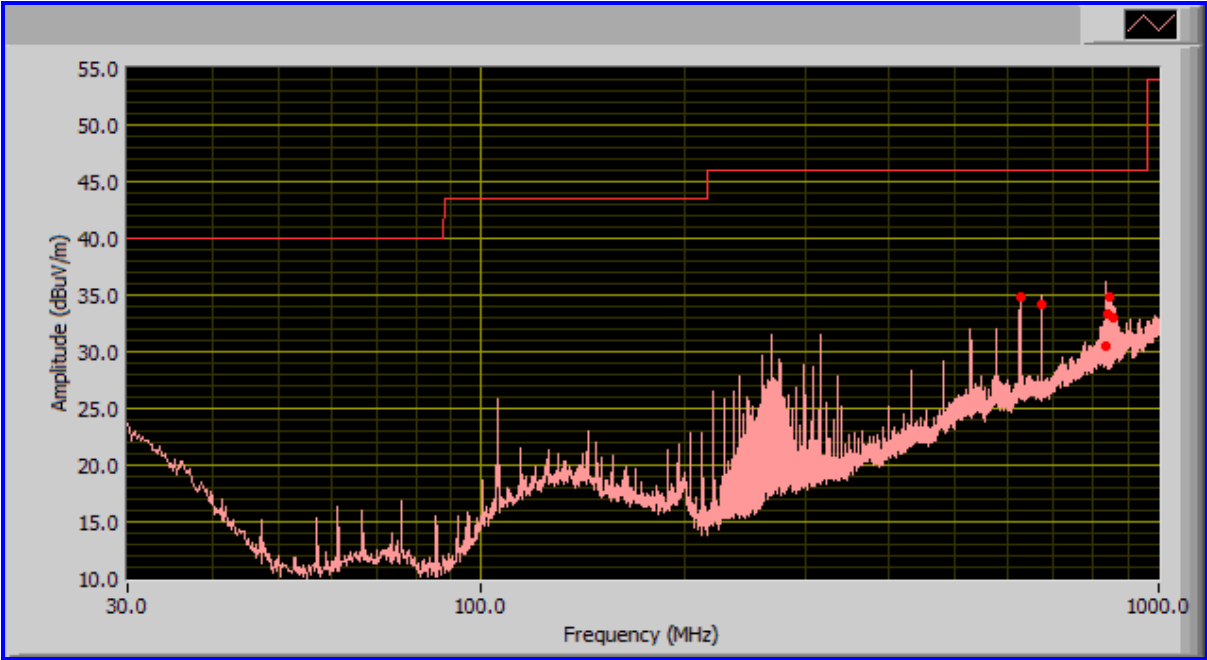


Limit

30MHz ~1000MHz Result @ 3m

| Frequency (MHz) | Corrected Quasi-Peak (dBµV/m) @ 3m | Turntable position (deg) | Polarity | Antenna height (cm) | Limit (dBµV/m) | Margin (dB) |
|-----------------|------------------------------------|--------------------------|----------|---------------------|----------------|-------------|
| 623.91          | 34.95                              | 248.00                   | H        | 104.00              | 46.00          | -11.05      |
| 841.94          | 32.51                              | 322.00                   | H        | 122.00              | 46.00          | -13.49      |
| 847.96          | 32.87                              | 293.00                   | H        | 198.00              | 46.00          | -13.13      |
| 671.90          | 33.07                              | 306.00                   | H        | 313.00              | 46.00          | -12.93      |
| 855.94          | 34.25                              | 300.00                   | H        | 196.00              | 46.00          | -11.75      |
| 831.93          | 32.55                              | 300.00                   | H        | 222.00              | 46.00          | -13.45      |

**Radiated Emissions: TX Mode (2D Scanner + Bluetooth)**

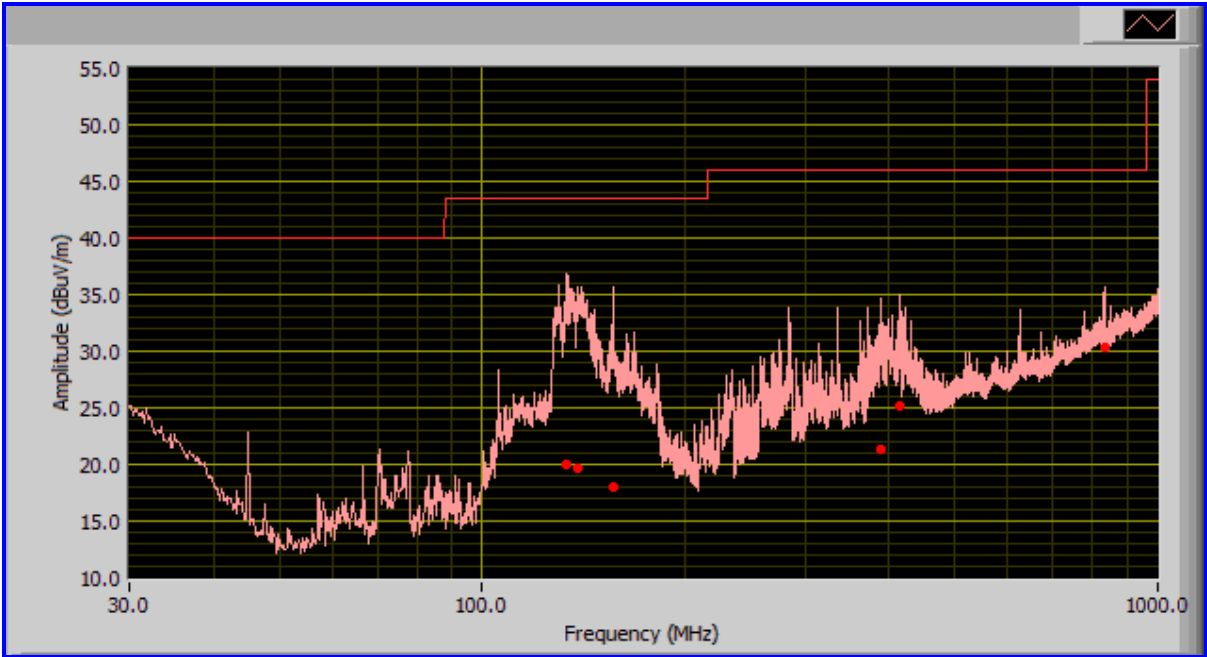


Limit

30MHz ~1000MHz Result @ 3m

| Frequency (MHz) | Corrected Quasi-Peak (dBµV/m) @ 3m | Turntable position (deg) | Polarity | Antenna height (cm) | Limit (dBµV/m) | Margin (dB) |
|-----------------|------------------------------------|--------------------------|----------|---------------------|----------------|-------------|
| 834.76          | 30.51                              | 108.00                   | H        | 347.00              | 46.00          | -15.49      |
| 671.87          | 34.25                              | 294.00                   | H        | 107.00              | 46.00          | -11.75      |
| 623.90          | 34.81                              | 295.00                   | H        | 104.00              | 46.00          | -11.19      |
| 847.94          | 34.90                              | 300.00                   | H        | 133.00              | 46.00          | -11.10      |
| 841.96          | 33.39                              | 327.00                   | H        | 184.00              | 46.00          | -12.61      |
| 857.91          | 33.02                              | 332.00                   | H        | 212.00              | 46.00          | -12.98      |

**Radiated Emissions: RX Mode (2D Scanner + Bluetooth)**



Limit

30MHz ~1000MHz Result @ 3m

| Frequency (MHz) | Corrected Quasi-Peak (dBµV/m) @ 3m | Turntable position (deg) | Polarity | Antenna height (cm) | Limit (dBµV/m) | Margin (dB) |
|-----------------|------------------------------------|--------------------------|----------|---------------------|----------------|-------------|
| 133.50          | 20.06                              | 359.00                   | V        | 347.00              | 43.50          | -23.44      |
| 138.45          | 19.70                              | 15.00                    | V        | 121.00              | 43.50          | -23.80      |
| 155.97          | 17.96                              | 182.00                   | V        | 253.00              | 43.50          | -25.54      |
| 834.66          | 30.36                              | 328.00                   | H        | 347.00              | 46.00          | -15.64      |
| 415.94          | 25.19                              | 298.00                   | H        | 171.00              | 46.00          | -20.81      |
| 388.02          | 21.36                              | 129.00                   | H        | 347.00              | 46.00          | -24.64      |

## 5.12 Radiated Spurious Emissions > 1GHz & Band Edge

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 1GHz – 40GH is +6.0dB (for EUTs < 0.5m X 0.5m X 0.5m).
4. Environmental Conditions
 

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |

Test Date : October 19 & 26 2011  
Tested By :Dan Coronia

Standard Requirement: 47 CFR §15.247(d)

**Procedures:** Equipment was setup in a semi-anechoic chamber. For measurements above 1 GHz an average measurement was taken with a 10Hz video bandwidth. The EUT was tested at low, mid and high with the highest output power. An emission was scan up to 10<sup>th</sup> harmonic of the operating frequency.

Sample Calculation:

EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)

**Test Result:** Pass

Note: other Bluetooth mode were verified, only the worst case result (Data Rate 3 Mbps) was presented

**Configuration: Operational Data Rate: 3 Mbps**

**Low Channel @ 2402 MHz @ 3 Meter**

| Frequency (GHz) | Reading (dBuV/m) | Direction (degree) | Height (m) | Polarity (H/V) | Antenna Loss (dB) | Cable Loss (dB) | Amplifier (dB) | Corrected Reading (dBuV/m) | 15.247/15.209 Limit @ 3m (dBuV/m) | Margin (dBuV/m) | Detector (pk/avg) |
|-----------------|------------------|--------------------|------------|----------------|-------------------|-----------------|----------------|----------------------------|-----------------------------------|-----------------|-------------------|
| 1.663           | 46.36            | 240                | 1.5        | V              | 25.70             | 2.20            | 31.98          | 42.24                      | 74.00                             | -31.76          | Peak              |
| 1.663           | 46.64            | 359                | 1.5        | H              | 25.70             | 2.20            | 31.98          | 42.52                      | 74.00                             | -31.48          | Peak              |
| 1.663           | 27.33            | 240                | 1.5        | V              | 25.70             | 2.20            | 31.98          | 23.21                      | 54.00                             | -30.79          | Ave               |
| 1.663           | 38.72            | 359                | 1.5        | H              | 25.70             | 2.20            | 31.98          | 34.60                      | 54.00                             | -19.40          | Ave               |
| 1.8821          | 49.12            | 357                | 1.0        | V              | 25.70             | 2.20            | 31.98          | 45.00                      | 74.00                             | -29.00          | Peak              |
| 1.8821          | 33.56            | 291                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 29.44                      | 74.00                             | -44.56          | Peak              |
| 1.8821          | 36.83            | 357                | 1.0        | V              | 25.70             | 2.20            | 31.98          | 32.71                      | 54.00                             | -21.29          | Ave               |
| 1.8821          | 30.11            | 291                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 25.99                      | 54.00                             | -28.01          | Ave               |
| 2.993           | 40.37            | 7                  | 1.0        | V              | 28.80             | 2.70            | 32.08          | 39.81                      | 74.00                             | -34.19          | Peak              |
| 2.993           | 41.62            | 240                | 1.5        | H              | 28.80             | 2.70            | 32.08          | 41.06                      | 74.00                             | -32.94          | Peak              |
| 2.993           | 36.71            | 7                  | 1.0        | V              | 28.80             | 2.70            | 32.08          | 36.15                      | 54.00                             | -17.85          | Ave               |
| 2.993           | 36.72            | 240                | 1.5        | H              | 28.80             | 2.70            | 32.08          | 36.16                      | 54.00                             | -17.84          | Ave               |
| 4.804           | 53.86            | 185                | 1.6        | V              | 32.20             | 4.10            | 32.49          | 57.70                      | 74.00                             | -16.31          | Peak              |
| 4.804           | 54.24            | 333                | 1.1        | H              | 32.20             | 4.10            | 32.49          | 58.08                      | 74.00                             | -15.93          | Peak              |
| 4.804           | 38.89            | 185                | 1.6        | V              | 32.20             | 4.10            | 32.49          | 42.73                      | 54.00                             | -11.28          | Ave               |
| 4.804           | 39.18            | 333                | 1.1        | H              | 32.20             | 4.10            | 32.49          | 43.02                      | 54.00                             | -10.99          | Ave               |
| 2.400           | 62.11            | 34                 | 1.6        | V              | 27.50             | 2.50            | 32.04          | 60.07                      | 74.00                             | -13.93          | Peak              |
| 2.400           | 62.17            | 0                  | 1.8        | H              | 27.50             | 2.50            | 32.04          | 60.13                      | 74.00                             | -13.87          | Peak              |
| 2.400           | 37.19            | 34                 | 1.6        | V              | 27.50             | 2.50            | 32.04          | 35.15                      | 54.00                             | -18.85          | Ave               |
| 2.400           | 37.30            | 0                  | 1.8        | H              | 27.50             | 2.50            | 32.04          | 35.26                      | 54.00                             | -18.74          | Ave               |

**Note:** Emission was scanned up to 25 GHz; no emissions were detected above the noise floor, which was at least 20 dB below the specification limit.

**Mid Channel @ 2441 MHz @ 3 Meter**

| Frequency (GHz) | Reading (dBuV/m) | Direction (degree) | Height (m) | Polarity (H/V) | Antenna Loss (dB) | Cable Loss (dB) | Amplifier (dB) | Corrected Reading (dBuV/m) | 15.247/15.209 Limit @ 3m (dBuV/m) | Margin (dBuV/m) | Detector (pk/avg) |
|-----------------|------------------|--------------------|------------|----------------|-------------------|-----------------|----------------|----------------------------|-----------------------------------|-----------------|-------------------|
| 1.662           | 45.73            | 271                | 1.1        | V              | 25.70             | 2.20            | 31.98          | 41.61                      | 74.00                             | -32.39          | Peak              |
| 1.662           | 48.56            | 234                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 44.44                      | 74.00                             | -29.56          | Peak              |
| 1.662           | 25.27            | 271                | 1.1        | V              | 25.70             | 2.20            | 31.98          | 21.15                      | 54.00                             | -32.85          | Ave               |
| 1.662           | 37.21            | 234                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 33.09                      | 54.00                             | -20.91          | Ave               |
| 1.895           | 34.64            | 143                | 1.0        | V              | 25.70             | 2.20            | 31.98          | 30.52                      | 74.00                             | -43.48          | Peak              |
| 1.895           | 46.41            | 114                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 42.29                      | 74.00                             | -31.71          | Peak              |
| 1.895           | 26.83            | 143                | 1.0        | V              | 25.70             | 2.20            | 31.98          | 22.71                      | 54.00                             | -31.29          | Ave               |
| 1.895           | 39.12            | 114                | 1.0        | H              | 25.70             | 2.20            | 31.98          | 35.00                      | 54.00                             | -19.00          | Ave               |
| 2.989           | 39.34            | 317                | 1.8        | V              | 28.80             | 2.70            | 32.08          | 38.78                      | 74.00                             | -35.22          | Peak              |
| 2.989           | 34.85            | 121                | 1.2        | H              | 28.80             | 2.70            | 32.08          | 34.29                      | 74.00                             | -39.71          | Peak              |
| 2.989           | 22.32            | 317                | 1.8        | V              | 28.80             | 2.70            | 32.08          | 21.76                      | 54.00                             | -32.24          | Ave               |
| 2.989           | 18.75            | 121                | 1.2        | H              | 28.80             | 2.70            | 32.08          | 18.19                      | 54.00                             | -35.81          | Ave               |
| 4.882           | 47.66            | 63                 | 1.7        | V              | 32.20             | 4.10            | 32.49          | 51.50                      | 74.00                             | -22.51          | Peak              |
| 4.882           | 51.70            | 356                | 1.7        | H              | 32.20             | 4.10            | 32.49          | 55.54                      | 74.00                             | -18.47          | Peak              |
| 4.882           | 30.02            | 63                 | 1.7        | V              | 32.20             | 4.10            | 32.49          | 33.86                      | 54.00                             | -20.15          | Ave               |
| 4.882           | 32.91            | 356                | 1.7        | H              | 32.20             | 4.10            | 32.49          | 36.75                      | 54.00                             | -17.26          | Ave               |

**Note:** Emission was scanned up to 25 GHz; no emissions were detected above the noise floor, which was at least 20 dB below the specification limit.



### High Channel @ 2480 MHz @ 3 Meter

| Frequency (GHz) | Reading (dBuV/m) | Direction (degree) | Height (m) | Polarity (H/V) | Antenna Loss (dB) | Cable Loss (dB) | Amplifier (dB) | Corrected Reading (dBuV/m) | 15.247/15.209 Limit @ 3m (dBuV/m) | Margin (dBuV/m) | Detector (pk/avg) |
|-----------------|------------------|--------------------|------------|----------------|-------------------|-----------------|----------------|----------------------------|-----------------------------------|-----------------|-------------------|
| 1.660           | 47.21            | 167                | 1.0        | V              | 25.70             | 2.16            | 31.98          | 43.09                      | 74.00                             | -30.91          | Peak              |
| 1.660           | 43.18            | 196                | 1.0        | H              | 25.70             | 2.16            | 31.98          | 39.06                      | 74.00                             | -34.94          | Peak              |
| 1.660           | 23.88            | 167                | 1.0        | V              | 25.70             | 2.16            | 31.98          | 19.76                      | 54.00                             | -34.24          | Ave               |
| 1.660           | 21.85            | 196                | 1.0        | H              | 25.70             | 2.16            | 31.98          | 17.73                      | 54.00                             | -36.27          | Ave               |
| 1.891           | 48.00            | 10                 | 1.6        | V              | 25.70             | 2.16            | 31.98          | 43.88                      | 74.00                             | -30.12          | Peak              |
| 1.891           | 51.79            | 134                | 1.0        | H              | 25.70             | 2.16            | 31.98          | 47.67                      | 74.00                             | -26.33          | Peak              |
| 1.891           | 19.11            | 10                 | 1.6        | V              | 25.70             | 2.16            | 31.98          | 14.99                      | 54.00                             | -39.01          | Ave               |
| 1.891           | 19.33            | 134                | 1.0        | H              | 25.70             | 2.16            | 31.98          | 15.21                      | 54.00                             | -38.79          | Ave               |
| 2.993           | 39.40            | 343                | 1.4        | V              | 28.80             | 2.72            | 32.08          | 38.84                      | 74.00                             | -35.16          | Peak              |
| 2.993           | 34.15            | 251                | 1.0        | H              | 28.80             | 2.72            | 32.08          | 33.59                      | 74.00                             | -40.41          | Peak              |
| 2.993           | 21.64            | 343                | 1.4        | V              | 28.80             | 2.72            | 32.08          | 21.08                      | 54.00                             | -32.92          | Ave               |
| 2.993           | 26.76            | 251                | 1.0        | H              | 28.80             | 2.72            | 32.08          | 26.20                      | 54.00                             | -27.80          | Ave               |
| 4.960           | 43.12            | 187                | 1.1        | v              | 32.20             | 4.10            | 32.49          | 46.96                      | 74.00                             | -27.05          | Peak              |
| 4.960           | 39.04            | 103                | 1.2        | h              | 32.20             | 4.10            | 32.49          | 42.88                      | 74.00                             | -31.13          | Peak              |
| 4.960           | 26.64            | 187                | 1.1        | v              | 32.20             | 4.10            | 32.49          | 30.48                      | 54.00                             | -23.53          | Ave               |
| 4.960           | 23.09            | 103                | 1.2        | h              | 32.20             | 4.10            | 32.49          | 26.93                      | 54.00                             | -27.08          | Ave               |
| 2.484           | 46.18            | 237                | 1.7        | v              | 27.50             | 2.50            | 32.04          | 44.14                      | 74.00                             | -29.86          | Peak              |
| 2.484           | 48.94            | 360                | 1.2        | h              | 27.50             | 2.50            | 32.04          | 46.90                      | 74.00                             | -27.10          | Peak              |
| 2.484           | 36.76            | 237                | 1.7        | v              | 27.50             | 2.50            | 32.04          | 34.72                      | 54.00                             | -19.28          | Ave               |
| 2.484           | 38.74            | 360                | 1.2        | h              | 27.50             | 2.50            | 32.04          | 36.70                      | 54.00                             | -17.30          | Ave               |

**Note:** Emission was scanned up to 25 GHz; no emissions were detected above the noise floor, which was at least 20 dB below the specification limit

### 5.13 Receiver Spurious Emissions

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 23°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1019mbar |
4. Test Date : October 19 & 26 2011  
Tested By : Dan Corona

Standard Requirement: RSSGen (4.8)

**Procedures:** The conducted spurious emissions were measured conducted using a spectrum analyzer at mid channels. the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz. Receiver spurious emissions at any discrete frequency shall not exceed 2 nanowatts in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

**Test Result:** Pass

Note: Only noise floor was detected. There is no outstanding emission.

## Annex A. TEST INSTRUMENT & METHOD

### Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

| Instrument                           | Model   | Calibration Due   |
|--------------------------------------|---------|-------------------|
| <b>AC Conducted Emissions</b>        |         |                   |
| R&S EMI Test Receiver                | ESIB40  | 05/19/2012        |
| R&S LISN                             | ESH2-Z5 | 05/18/2012        |
| CHASE LISN                           | MN2050B | 05/18/2012        |
| Universal Radio Communication Tester | CMU200  | 02/22/2012        |
| Sekonic Hygro Hermograph             | ST-50   | 05/18/2012        |
| <b>Radiated Emissions</b>            |         |                   |
| Spectrum Analyzer                    | 8564E   | 05/19/2012        |
| EMI Receiver                         | ESIB 40 | 05/18/2012        |
| R&S LISN                             | ESH2-Z5 | 05/18/2012        |
| CHASE LISN                           | MN2050B | 05/19/2012        |
| Antenna(1 ~18GHz)                    | 3115    | 6/2/2012          |
| Antenna (30MHz~2GHz)                 | JB1     | 6/1/2012          |
| Chamber                              | 3m      | 10/13/2011        |
| Pre-Amplifier(1 ~ 26GHz)             | 8449    | 5/17/2012         |
| Horn Antenna (18~40GHz)              | AH-840  | 7/23/2013         |
| Microwave Pre-Amp (18~40GHz)         | PA-840  | Every 2000 Hours* |
| Universal Radio Communication Tester | CMU200  | 02/22/2012        |
| Signal Analyzer                      | FSIQ7   | 5/5/2012          |
| Sekonic Hygro Hermograph             | ST-50   | 05/18/2012        |

Note: Functional Verification

\* Or Pre-determined used hours, whichever meet first.

## Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in [Annex B](#).
2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.

### Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

### Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 15 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.

### Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV  
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. **7.96 dB below limit**

**Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION**

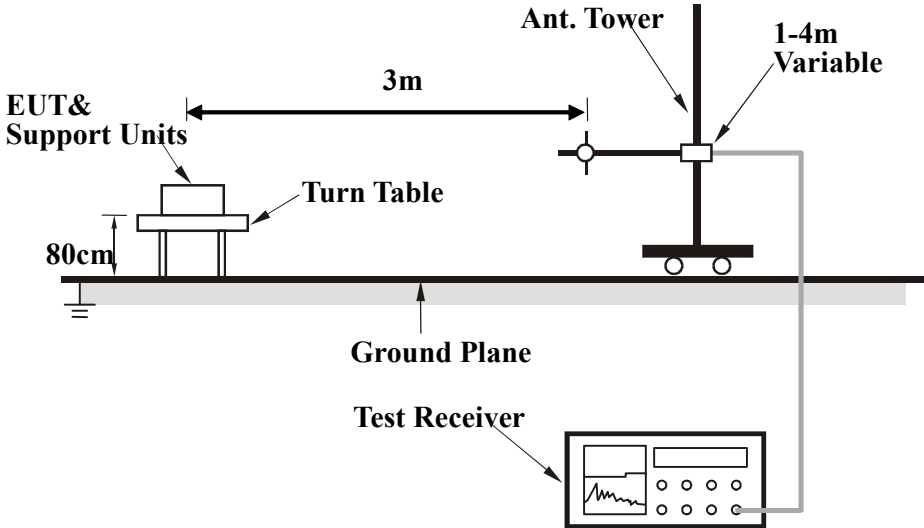
**EUT Characterisation**

EUT characterisation, over the frequency range from 30MHz to 1GHz (for FCC tests, until the 5<sup>th</sup> harmonic for operating frequencies  $\geq$  108MHz), was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

**Test Set-up**

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table as shown in Annex B.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



**Test Method**

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

**Final Radiated Emission Measurement**

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

| Frequency Band (MHz) | Function | Resolution bandwidth | Video Bandwidth |
|----------------------|----------|----------------------|-----------------|
| 30 to 1000           | Peak     | 100 kHz              | 100 kHz         |
| Above 1000           | Peak     | 1 MHz                | 1 MHz           |
|                      | Average  | 1 MHz                | 10 Hz           |

**Description of Radiated Emission Program**

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the scan on four different antenna heights, 2 antenna polarity, and 360 degrees table rotation. For example, the program was set to run 30 MHz to 1 GHz scan; the program will first start from a meter antenna height and divide the 30 MHz to 1 GHz into 10 separate parts of maximum hold sweeps. Each parts of maximum hold sweep, the program will collect the data from 0 degree to 360 degrees table rotation. After the program complete the 1m scan, the antenna continues to rise to 2m and continue the scan. The step will repeated for all specified antenna height and polarity. This program will perform the Quasi Peak measurement after the signal maximization process and pre-scan routine. The final measurement will be base on the pre-scan data reduction result.

**Sample Calculation Example**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

Where:

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor or Set RBW} = 1\text{MHz, VBW} = 10\text{Hz.}$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

**Annex B EUT AND TEST SETUP PHOTOGRAPHS**

Please see the attachment

**Annex C. TEST SETUP AND SUPPORTING EQUIPMENT**

**EUT TEST CONDITIONS**

**Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION**

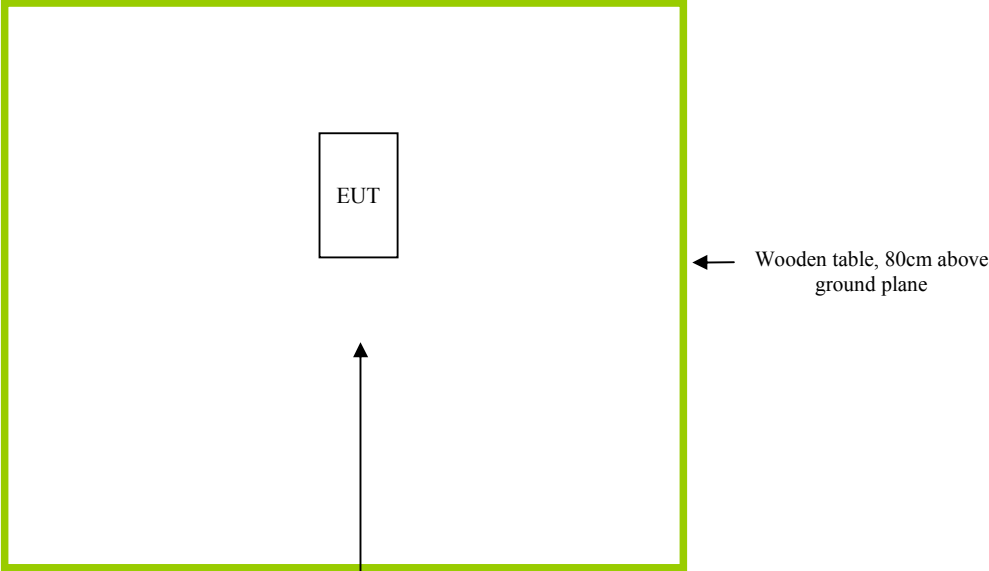
The following is a description of supporting equipment and details of cables used with the EUT.

| Equipment Description<br>(Including Brand Name) | Model & Serial Number | Cable Description<br>(List Length, Type & Purpose) |
|---|-----------------------|--|
| N/A   | N/A                   | N/A  |

### Block Configuration Diagram for Radiated Emission

LISN 1,  
120V@60Hz,  
Power Input

LISN 2,  
120V@60Hz,  
Power Input



NOTE: EUT is using battery supply

3 Meter

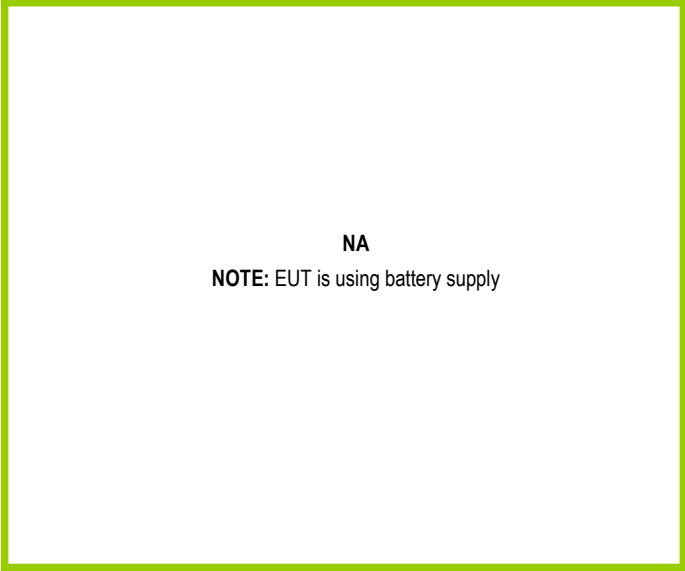
Receiving Antenna



**Block Configuration Diagram for Conducted Emission**

LISN 1,  
120V@60Hz,  
Power Input

LISN 2,  
120V@60Hz,  
Power Input



← Wooden table, 80cm above ground plane

**Annex C.ii. EUT OPERATING CONDITIONS**

The following is the description of how the EUT is exercised during testing.

| Test                     | Description Of Operation                                       |
|--------------------------|--|
| <b>Emissions Testing</b> | The EUT was controlled by itself Using manufacturer's program. |
| <b>Others Testing</b>    | TX mode is normal mode with full power.                        |

## **Annex D USER MANUAL, BLOCK & CIRCUIT DIAGRAM**

**Please see attachment**

**Annex E SIEMIC ACCREDITATION**

**SIEMIC ACCREDITATION DETAILS: A2LA 17025 & ISO Guide 65 : 2742.01 , 2742.2**





**The American Association for Laboratory Accreditation**  
World Class Accreditation

## Accredited Laboratory

A2LA has accredited

# SIEMIC LABORATORIES

*San Jose, CA*  
 for technical competence in the field of  
**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 23rd day of November 2010.



President & CEO  
 For the Accreditation Council  
 Certificate Number 2742.01  
 Valid to September 30, 2012

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.



**The American Association for Laboratory Accreditation**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

SIEMIC LABORATORIES<sup>1</sup>  
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**ELECTRICAL**

Valid to: September 30, 2012

Certificate Number: 2742.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following EMC, Product Safety, Radio and Telecommunication tests:

| <u>Test Description:</u>        | <u>Test Method:</u>   |
|---------------------------------|---|
| EN & IEC – Emissions & Immunity | IEC/CISPR 11; IEC/CISPR 12; EN 55011; IEC/CISPR 22; EN 55022; IEC/CISPR 20; EN 55020; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4; EN 61204-3; EN 61326, EN 61326-1; EN 61000-3-2; EN 61000-3-3; EN 50081-1, EN 50081-2; EN 50082-1; IEC 61000-4-2; EN 61000-4-2; IEC 61000-4-3 (limited up to 2.7 GHz and 3V/m); EN 61000-4-3; (limited up to 2.7 GHz and 3V/m); IEC 61000-4-4; EN 61000-4-4; IEC 61000-4-5; EN 61000-4-5; IEC 61000-4-6; EN 61000-4-6; IEC 61000-4-8; EN 61000-4-8; IEC 61000-4-11; EN 61000-4-11; IEC/CISPR 24; EN 55024; EN 50412-2-1; EN 50083-2; EN 50090-2-2; EN 50091-2; EN 50130-4; EN 50130-4 +A12; IEC 60601-1-2; EN 12184; EN 55015; EN 61547; CISPR 16-1-4  |
| Korea – Emissions & Immunity    | KCC Notice 2009-27, Nov. 5, 2009; RRA Announce 2009-9, Dec. 21, 2009; KN 22:2007-12; KCC Notice 2009-27, Nov. 5, 2009; RRA Notice 2009-10, Dec. 21, 2009; KN 24:2008-5; KN 61000-4-2:2008-5; KN 61000-4-3:2008-5; KN 61000-4-4:2008-5; KN 61000-4-5:2008-5; KN 61000-4-6:2008-5; KN 61000-4-8:2008-5; KN 61000-4-11:2008-5; RRL Notice 2008-3; RRL Notice 2008-4; RRL Notice 2005-131; RRL Notice 2007-99; RRL Notice 2007-101; RRL Notice 2008-4; RRA Notice No 2008-11(2008.12.16); RRA Notice No 2008-12(2008.12.16); KN 60601-1-2; KCC Notice 2009-27; KN 301 489-1(2008-05); KN 301 489-7(2008-05); KN 301 489-17(2008-05); KN 301 489-24(2008-05); KN 16-1-1(2008-05); KN 16-1-2(2008-05); KN 16-1-3(2008-05); KN 16-1-4(2008-05); KN 16-1-5(2008-05); KN 16-2-1(2008-05); KN 16-2-2(2008-05); KN 16-2-3(2008-05); KN 16-2-4(2008-05) |

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| US / FCC - Emissions                                | SAE J1113-11, SAE J1113-12; SAE J1113-41; SAE J1113-4;<br>SAE J1113-13; FCC Method 47 CFR Part 18, FCC Report and Order ET<br>Docket 98-153 (FCC 02-48); FCC Method 47 CFR Parts 15, including<br>Subpart G, using FCC Order 04-425<br>ANSI C63.4(2009); ANSI C63.10(2009); ANSI C63.4:2003<br>ANSI C63.4(2003) with FCC Method 47 CFR Part 11;<br>ANSI C63.4(2003) with FCC Method 47 CFR Part 15, Subpart E;<br>ANSI C63.4(2003) with FCC Method 47 CFR Part 15, Subpart C;<br>ANSI C63.4(2003) and DA 02-2138;<br>ANSI C63.4(2003) with FCC Method 47 CFR Part 15, Subpart B                               |
| Canada – Emissions                                  | ICES-001; ICES-002; ICES-003 Issue 4; ICES-003 Issue 4 (2004);<br>ICES-006 Issue 1  |
| Vietnam – Emission &<br>Immunity                    | TCN 68-193:2003; TCN 68-196:2001; TCVN 7189:2002  |
| Australia / New Zealand –<br>Emissions and Immunity | AS/NZS 1044; AS/NZS 4251.1; AS/NZS 4251.2; AS/NZS CISPR 22;<br>AS/NZS 3548; AS/NZS 2279.3; AS/NZS 61000-3-3; AS/NZS CISPR 11;<br>AS/NZS CISPR 24; AS/NZS 61000.6.3; AS/NZS 61000.6.4;<br>AS/NZS CISPR 14.1; AS/NZS 61000.3.2  |
| Japan – Emissions                                   | JEITA IT-3001; VCCI-V-3:2010.4 (up to 6 GHz)  |
| China – Emissions                                   | GB9254; GB17625.1   |
| Taiwan – Emissions                                  | CNS 13438 (up to 6 GHz); CNS 13783-1; CNS 13803; CNS 13439  |
| Singapore – Emissions &<br>Immunity                 | IDA TS EMC; CISPR 22; IEC 61000-4-2; IEC 61000-4-3;<br>IEC 61000-4-4; IEC 61000-4-5; IEC 61000-4-6  |
| FCC – Unlicensed Radio<br>A1 to A4                  | A1: 47 CFR Parts 11 (Emergency Alert System (EAS)), 15 (Radio<br>Frequency Devices) and 18 (Industrial, Scientific, and Medical Equipment);<br>FCC OST/MP-5(1986); ANSI C63.4(2003); ANSI C63.4(2009);<br>ANSI C63.10(2009)<br><br>A2: 47 CFR Part 15 (Radio Frequency Devices); ANSI C63.4(2003);<br>ANSI C63.4(2009); ANSI C63.10(2009)<br><br>A3: 47 CFR Part 15 (Radio Frequency Devices); ANSI C63.17:2006;<br>ANSI C63.10(2009); IEEE Std 1528:2003 + Ad1; Std IEEE 1528A:2005<br><br>A4: 47 CFR Part 15 (Radio Frequency Devices); ANSI C63.10(2009);<br>IEEE Std 1528:2003 + Ad1; Std IEEE 1528A:2005 |
| FCC – Licensed Radio<br>B1 to B4                    | B1: 47 CFR Parts 2 (Frequency Allocations and Radio Treaty Matters;<br>General Rules and Regulations), 22 (Public Mobile Services), 24 (Personal<br>Communications Services), 25 (Satellite Communications), and 27<br>(Miscellaneous Wireless Communications Services);<br>ANSI/TIA-603-C (2004), Land Mobile FM or PM Communications<br>Equipment Measurement and Performance Standard;<br>IEEE Std 1528:2003 + Ad1; Std IEEE 1528A:2005  |



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| <p>FCC – Licensed Radio<br/>(continued) B1 to B4</p> | <p>B2: 47 CFR Parts 2 (Frequency Allocations and Radio Treaty Matters; General Rules and Regulations), 22 (Public Mobile Services), 74 (Experimental Radio Auxiliary, Special Broadcast and Other Program Distributional Services), 90 (Private Land Mobile Radio Services), 95 (Personal Radio Services), and 97 (Amateur Radio Services); ANSI/TIA-603-C (2004), Land Mobile FM or PM Communications Equipment Measurement and Performance Standard</p> <p>B3: 47 CFR Parts 2 (Frequency Allocations and Radio Treaty Matters; General Rules and Regulations); 80 (Stations in the Maritime Services) , 87 (Aviation Services); ANSI/TIA-603-C (2004), Land Mobile FM or PM Communications Equipment Measurement and Performance Standard</p> <p>B4: 47 CFR Parts 2 (Frequency Allocations and Radio Treaty Matters; General Rules and Regulations); 27 (Broadband Radio Services (BRS) and Educational Broadband Services (EBS)), 74 (Experimental Radio Auxiliary, Special Broadcast and Other Program Distributional Services), and 101 (Fixed Microwave Services); ANSI/TIA-603-C (2004), Land Mobile FM or PM Communications Equipment Measurement and Performance Standard</p> |
| <p>Canada – Radio</p>                                | <p>RSS 102; RSS 111; RSS 112; RSS 117; RSS 118; RSS 119; RSS 123; RSS 125; RSS 127; RSS 128; RSS 129; RSS 131; RSS 132; RSS 133; RSS 134; RSS 135; RSS 136; RSS 137; RSS 138; RSS 139; RSS 141; RSS 142; RSS 170; RSS 181; RSS 182; RSS 188; RSS 191; RSS 192; RSS 193; RSS 194; RSS 195; RSS 196; RSS 197; RSS 198; RSS 199; RSS 210; RSS 220; RSS 213; RSS 215; RSS 243; RSS 287; RSS 310; RSS Gen</p>   |
| <p>CE – Radio</p>                                    | <p>EN 301 502; EN 301 511; EN 301 526; EN 301 681; EN 301 721; EN 301 751; EN 301 753; EN 301 783-2; EN 301 796; EN 301 797; EN 301 840-2; EN 301 843-1; EN 301 843-4; EN 301 843-5; EN 301 893; EN 301 908-01; EN 301 908-02; EN 301 908-03; EN 301 908-04; EN 301 908-05; EN 301 908-06; EN 301 908-07; EN 301 908-08; EN 301 908-09; EN 301 908-10; EN 301 908-11; EN 301 929-2; EN 301 997-2; EN 302 018-2; EN 302 054-2; EN 302 064-2; EN 302 066-2; EN 302 077-2; EN 302 186; EN 302 195-2; EN 302 217-3; EN 302 245-2; EN 302 288-2; EN 302 291-2; EN 302 296; EN 302 297; EN 302 326-2; EN 302 326-3; EN 302 340; EN 302 372-2; EN 302 426; EN 302 454-2; EN 302 502; EN 302 510-2;</p>  |
|  | <p>EN 302 217-4-2; EN 300 224-1; EN 300 279; EN 300 339; EN 300 385; EN 301 839-2; EN 301 843-6; EN 302 017-2; EN 302 208-2; EN 302 217-2-2; ETS 300 329; ETS 300 445; ETS 300 446; ETS 300 683; ETS 300 826; ETS EN 300 328; ETSI EN 300 086-2; EN 302217-1; EN 302217-2-1; EN 302217-4-1; EN 302288-1; EN 302908-12; EN 302326-1; EN 301929-1; EN 301997-1; EN 300224-2; EN 301839-1; EN 301843-1; EN 301843-2; EN 301843-3; EN 301843-4; EN 301843-5; EN 302017-1; EN 302208-1; EN 300086-1; EN 300113-1; EN 300224-1; EN 300341-1; EN 302291-1; EN 302500-1; EN 302500-2; ETSI EN 300 113-2; ETSI EN 300 197; ETSI EN 300 198; ETSI EN 300 219-1; ETSI EN 300 219-2; ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 220-3; ETSI EN 300 224-2; ETSI EN 300 296-1; ETSI EN 300 296-2; ETSI EN 300 328-1; ETSI EN 300 328-2; ETSI EN 300 330; ETSI EN 300 330-1; ETSI EN 300 330-2;</p>  |



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| CE – Radio (conitnued)          | ETSI EN 300 341-2; ETSI EN 300 373-1; ETSI EN 300 373-2; ETSI EN 300 373-3; ETSI EN 300 390-1; ETSI EN 300 390-2; ETSI EN 300 422-1; ETSI EN 300 422-2; ETSI EN 300 431; ETSI EN 300 440-1; ETSI EN 300 440-2; ETSI EN 300 454-1; ETSI EN 300 454-2; ETSI EN 300 718-2; ETSI EN 301 021; ETSI EN 301 166-1; ETSI EN 301 166-2; ETSI EN 301 178-2; ETSI EN 301 213-1; ETSI EN 301 213-2; ETSI EN 301 213-3; ETSI EN 301 213-4; ETSI EN 301 213-5; ETSI EN 301 357-1; ETSI EN 301 357-2; ETSI EN 301 390; ETSI EN 301 459; ETSI EN 301 489-01 (excluding section 9.6); ETSI EN 301 489-02; ETSI EN 301 489-03; ETSI EN 301 489-04; ETSI EN 301 489-05; ETSI EN 301 489-06; ETSI EN 301 489-07; ETSI EN 301 489-08; ETSI EN 301 489-09; ETSI EN 301 489-10; ETSI EN 301 489-11; ETSI EN 301 489-12; ETSI EN 301 489-13; ETSI EN 301 489-14; ETSI EN 301 489-15; ETSI EN 301 489-16; ETSI EN 301 489-17; ETSI EN 301 489-18; ETSI EN 301 489-19; ETSI EN 301 489-20; ETSI EN 301 489-22; ETSI EN 301 489-23; ETSI EN 301 489-24; ETSI EN 301 489-25; ETSI EN 301 489-26; ETSI EN 301 489-27; ETSI EN 301 489-28; ETSI EN 301 489-31; ETSI EN 301 489-32; IEC 60945 |
| IDA – Radio                     | IDA TS 3G-BS; IDA TS 3G-MT; IDA TS AR; IDA TS CT-CTS; IDA TS GMPCS; IDA TS GSM-BS; IDA TS GSM-MT; IDA TS LMR; IDA TS RPG; IDA TS SRD; IDA TS UWB; IDA TS WBA   |
| Vietnam – Radio                 | TCN 68-242:2006; TCN 68-243:2006; TCN 68-246:2006  |
| Korea – Radio                   | KCC Notice 2009-13; KCC Notice 2008-26; RRL Notice 2008-2; RRL Notice 2005-105; RRL Notice 2008-17; RRL Notice 2005-127; RRL Notice 2005-24; RRL Notice 2005-25; RRL Notice 2005-179; RRL Notice 2008-10; RRL Notice 2007-49; RRL Notice 2007-20; RRL Notice 2007-11; RRL Notice 2007-80; RRL Notice 2004-68; KCC Notice 2009-36, Dec. 8, 2009; RRL Notice 2009-6, October 15, 2009; KCC Notice 2010-1; KCC Notice 2010-12; KCC Notice 2010-13   |
| Taiwan – Radio                  | LP0002; PLMN07; PLMN01; PLMN08   |
| Australia - New Zealand – Radio | AS 2772.2; AS/NZS 4281; AS/NZS 4268; AS/NZS 4280.1; AS/NZS 4583; AS/NZS 4280.2; AS/NZS 4281; AS/NZS 4295; AS/NZS 4582; AS/NZS 4769.1; AS/NZS 4769.2; AS/NZS 4770; AS/NZS 4771  |
| Hong Kong – Radio               | HKTA 1002; HKTA 1007; HKTA 1008; HKTA 1010; HKTA 1015; HKTA 1016; HKTA 1020; HKTA 1022; HKTA 1026; HKTA 1027; HKTA 1029; HKTA 1030; HKTA 1031; HKTA 1032; HKTA 1033; HKTA 1034; HKTA 1035; HKTA 1036; HKTA 1037; HKTA 1039; HKTA 1041; HKTA 1042; HKTA 1043; HKTA 1044; HKTA 1046; HKTA 1047; HKTA 1048; HKTA 1049; HKTA 1051; HKTA1052; HKTA1053; HKTA 1054; HKTA 1055  |





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| FCC Telephone Terminal Equipment Scope C1  | ANSI/TIA-968-A:03; ANSI/TIA-968-A-1:03; ANSI/TIA-968-A-2:04; ANSI/TIA-968-A-3:05; ANSI/TIA-968-A-4:07; ANSI/TIA-968-A-5:07; TIA-968-B; FCC Rule Part 68; 47 CFR Part 68.316; 47 CFR Part 68.317; ANSI/TIA/EIA-464-C; TIA-810-B; T1.TRQ6 (2002); TCB-31-B (1998); TIA-470.110-C; TIA-810-B; TIA-920  |
| Canada – Telecom                           | CS-03 Part V Issue 9:2009 Amendment 1;<br>CS-03 Part VIII Issue 9:2009 Amendment 4;<br>CS-03 Part I Issue 9:2006 Amendment 3; CS-03 Part II Issue 9:2004;<br>CS-03 Part III Issue 9:2004; CS-03 Part V Issue 9:2004 ;<br>CS-03 Part VI Issue 9:2004; CS-03 Part VII Issue 9:2006 Amendment 3;<br>CS-03 Part VIII Issue 9:2007 Amendment 3;<br>CS-03 Issue 9:04 + A2(06) + A3(06)  |
| Europe – Telecom                           | TBR 2: 01-1997; TBR 004 Ed.1.95 + A1 (97); TBR 1; TBR 3;<br>TBR 12:A1 01-1996; TBR 013 ed.1; TBR 024 ed.1; TBR 25; TBR 38 ed.1;<br>ETSI ES 203 021-05 ; ETSI ES 203 021-2 ; ETSI ES 021-3;<br>TBR 021; ETSI EG 201 121; ETSI EN 301 437; ETSI TS 101 270-1;<br>ITU-T Recommendation Q.920;<br>ITU-T Recommendation Q.920 – Amendment 1;<br>ITU-T Recommendation Q.921;<br>ITU-T Recommendation Q.921 – Amendment 1;<br>ITU-T Recommendation Q.931;<br>ITU-T Recommendation Q.931 – Amendment 1;<br>Erratum 1 (02/2003) ITU-T Recommendation Q.931 (05/1998);<br>ISDN User Network Interface Layer 3 Specification for Basic Call Control;<br>ITU-T Recommendation P.300 |
| Australia – Telecom<br>Australia – Telecom | AS/CA S003.1:2010; AS/CA S003.2:2010; AS/CA S003.3:2010;<br>AS/CA S004:2010; AS/ACIF S006:2008; AS/ACIF S041.1:2009<br>AS/ACIF S041.2:2009; AS/ACIF S041.3:2009; AS/ACIF S042.1:2008;<br>AS/ACIF S043.2:2008; AS/ACIF S043.3:2008; AS/ACIF S002:05;<br>AS/ACIF S003:06; AS/ACIF S004:06;<br>AS/ACIF S006:01; AS/ACIF S016:01; AS/ACIF S031:01;<br>AS/ACIF S038:01; AS/ACIF S040:01; AS/ACIF S041:05;<br>AS/ACIF S043.2:06; AS ACIF S042.1   |
| New Zealand – Telecom                      | PTC200:2006; PTC200 Issue No.2:97 + A1(980); PTC220; PTC273:2007;<br>TNA 115; TNA 117   |
| Singapore – Telecom                        | IDA TS ADSL, Issue 1, Rev. 1 (April 2006);<br>IDA TS DLCN, Issue 1 (July 2005);<br>IDA TS ISDN BA, Issue 1 (July 2005);<br>IDA TS ISDN PRA, Issue 1 (July 2005);<br>IDA TS ISDN 3 (Oct. 2000); IDA TS-PSTN, Issue 1 (March 2007);<br>IDA TS ACLIP 07  |
| Hong Kong – Telecom                        | HKTA 2011; HKTA 2012; HKTA 2013; HKTA 2014; HKTA 2015;<br>HKTA 2017; HKTA 2018; HKTA 2019; HKTA 2022; HKTA 2023;<br>HKTA 2024; HKTA 2026; HKTA 2027; HKTA 2028; HKTA 2029;<br>HKTA 2030; HKTA 2031; HKTA 2032; HKTA 2033  |

*Peter Mlync*



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| Vietnam – Telecom           | TCN 68-188:2000; TCN 68-193:2003; TCN 68-196:2001;<br>TCN 68-143:2003; TCN 68-192:2003; TCN 68-189:2000;<br>TCN 68-221:2004; TCN 68-222:2004; TCN 68-245:2004;<br>TCN 68-223:2004  |
| Korea – Telecom             | RRA Notice 2009-38, Sep. 11, 2009;<br>RRA Notice 2009-7 (including attachments 1, 3, 5, 6);<br>Presidential Decree 21098, RRL Notice 2007-30;<br>RRL Notice 2008-10 (attachments 1, 3, 5, 6); RRL Notice 2009-25;<br>RRL Notice 2008-59  |
| China – Telecom             | YD/T 514-1:98; YD/T 1277.1-2003; GB/T 17904.1-1999;<br>GB/T 17904.2-1999; GB/T 17154.1-1997; GB/T 17154.2-1997;<br>YD/T1091-2000; YD/T1006-1999; GB/T 17789-1999   |
| Taiwan – Telecom            | PSTN01:03; ADSL01:08; ID0002; IS6100: 93   |
| Japan – Telecom             | JATE Blue Book, Green Book;<br>Ministerial Ordinance of the Ministry of Posts and Telecommunications No.<br>31 of April 1, 1985 (last amended on March 22 2004);<br>Ordinance Concerning Technical Conditions Compliance Approval etc. of<br>Terminal Equipment  |
| South Africa – Telecom      | DPT-TE-001; TE-002; TE-003; TE-004; TE-005; TE-006; TE-007;<br>TE-008; TE-009; TE-010; TE-012 (telephone interface);<br>TE-013 (telephone interface); TE-014; TE-015; TE-018; SWS-001;<br>SWS-002; SWS-003; SWS-004; SWS-005; SWS-006; SWS-007;<br>SWS-008; SWS-009; SWS-010   |
| Israel – Telecom            | Israel MoC Spe. 23/96  |
| Mexico – Telecom            | NOM-151-SCT1-1999; NOM-152-SCT1-1999   |
| Argentina – Telecom         | CNC-ST2-44-01  |
| Brazil – Telecom            | Resolution 392-2005  |
| International Telecom Union | ITU-T-G.703:01; ITU-T-G.823:93; ITU-T G.824;<br>ITU-T G.825; ITU-T-G.991.2; ITU-T-G.992.1;<br>ITU-T-G.992.3; ITU-T-G.992.5; ITU-T-G.993.1  |
| Product Safety              | IEC 60950-1; EN 60950-1; UL 60950-1; IEC 60601-1-1;<br>CAN/CSA 22.2 NO. 60950-1-03; SS-EN 60950-1; AS/NZ 60950-1,<br>(voltage surge testing up to 6kV, excluding Annex A and H);<br>CNS 14336, CNS 14408; GB4943;<br>President Notice 20664; RRL Notice 2008-10 (attachment 4);<br>RRA Notice 2009-7 (attachment 4);<br>TCN 68-190:2003; SABS IEC 60950; IEC/EN 61558;<br>IEC/EN 61558-2-7; EN 62115; IEC 60215; EN 60958;<br>EN 60598; IEC 215 (1987) + A1 (1992) + A2 (1994) |
| Japan - Radio               | ARIB STD-T81; ARIB STD-T66; RCR STD-1; RCR STD-29;<br>ARIB STD-T94 Fascicle 1; ARIB STD-T90; ARIB STD-T89;<br>RCR STD-33   |



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| SAR & HAC                                     | IEEE P1528:2003 + Ad1; IEEE 1528A:2005;<br>FCC OET Bulletin 65 Supplement C; FCC OET Bulletin 65; ANSI C95;<br>ANSI C63.19; FCC 47 CFR 20.19; H46-2/99-273E; EN 50360;<br>EN 50361; IEC62209-1; IEC 62209-2; EN 50371; EN 50383; EN 50357;<br>EN 50364; RRL 2008-18; RRL 2008-16; KCC 2009-27; RRL 2004-67;<br>CNS 14958-1; CNS 14959; NZS 2772.1; NZS 6609.2; Resolution N 533 |
| Japan –<br>Notification No. 88 of<br>MIC 2004 |   |
| Table No 13                                   | CB Radio  |
| Table No 21                                   | Cordless Telephone  |
| Table Nos 22-1 thru 22-17                     | Low Power Radio Equipment   |
| Table No 36                                   | Low Power Security System   |
| Table No 43                                   | Low Power Data Communication in the 2.4 GHz Band  |
| Table No 44                                   | Low Power Data Communication in the 2.4 GHz Band  |
| Table No 45                                   | Low Power Data Communication in the 5.2, 5.3, 5.6 GHz Bands   |
| Table No 46                                   | Low Power Data Communication in the 25 and 27 GHz Bands   |
| Table No 47                                   | Base Station for 5 GHz Band Wireless Access System  |
| Table No 47                                   | Base Station for 5 GHz Band Wireless Access System (low spurious type)  |
| Table No 47                                   | Land Mobile Relay for 5 GHz Band Wireless Access System (limited for use in special zones)  |
| Table No 47                                   | Land Mobile Relay for 5 GHz Band Wireless Access System (limited for use in special zones, low spurious type)   |
| Table No 47                                   | Land Mobile Relay for 5 GHz Band Wireless Access System   |
| Table No 47                                   | Land Mobile Relay for 5 GHz Band Wireless Access System (low spurious type)   |
| Table No 47                                   | Land Mobile Relay for 5 GHz Band Wireless Access System (low power type)  |
| Table No 50                                   | Digital Cordless Telephone  |
| Table No 50                                   | PHS Base Station  |
| Table No 50                                   | PHS Land Mobile Station   |
| Table No 50                                   | PHS Relay Station   |
| Table No 50                                   | PHS Test Station  |
| Table No 64                                   | Mobile Station for Dedicated Short Range Communication Systems  |
| Table No 64                                   | Base Station for Dedicated Short Range Communication Systems  |
| Table No 64                                   | Test Station for Dedicated Short Range Communication Systems  |
| Table No 70                                   | UWB (Ultra Wide Band) Radio System  |



**SIEMIC, INC.**

Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
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www.siemic.com

<sup>1</sup>Note: This accreditation covers testing performed at the laboratory listed above and the OATS located at 44366 South Grimmer Blvd., Fremont CA 94538. At this site "Radiated Emissions" are tested at a measurement distance of 10m.

<sup>\*</sup>Limitations for listed standards are indicated by italics and Scope excludes protocol sections of applicable standards.



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San Jose, CA

for technical competence as a

### Product Certification Body

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), IDA (Singapore), IC (Canada), OFTA (Hong Kong), and Japan (MIC) requirements.

Presented this 23rd day of November 2010.



President & CEO  
For the Accreditation Council  
Certificate Number 2742.01  
Valid to September 30, 2012  
Revised December 16, 2010

*For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.*



**The American Association for Laboratory Accreditation**

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 65:1996

SIEMIC INC.  
 2206 Ringwood Ave.  
 San Jose, CA 95131  
 Mr. Snell Leong (Authorized Representative) Phone: 408 526 1188  
[www.siemic.com](http://www.siemic.com)

**PRODUCT CERTIFICATION CONFORMITY ASSESSMENT BODY (CAB)**

Valid to: September 30, 2012 Certificate Number: 2742.02

In recognition of the successful completion of the A2LA Certification Body Accreditation Program evaluation, including the US Federal Communications Commission (FCC), Industry Canada (IC), Singapore (IDA) and Hong Kong (OFTA) requirements for the indicated types of product certifications, accreditation is granted to this organization to perform the following product certification schemes:

Economy Scope

**Federal Communication Commission - (FCC)**

|                                    |                |
|------------------------------------|----------------|
| Unlicensed Radio Frequency Devices | A1, A2, A3, A4 |
| Licensed Radio Frequency Devices   | B1, B2, B3, B4 |
| Telephone Terminal Equipment       | C              |

*\*Please refer to FCC TCB Program Roles and Responsibilities, released July 22, 2010 detailing scopes, roles and responsibilities. <http://fjallfoss.fcc.gov/oetcf/kdb/forms/FTSsearchResultPage.cfm?id=44683&switch=P>*

**Industry Canada - (IC)**

|       |  |
|-------|--|
| Radio | Scope 1-Licence-Exempt Radio Frequency Devices;<br>Scope 2-Licensed Personal Mobile Radio Services;<br>Scope 3-Licensed General Mobile & Fixed Radio Services;<br>Scope 4-Licensed Maritime & Aviation Radio Services;<br>Scope 5-Licensed Fixed Microwave Radio Services; |
|-------|--|

*\*Please refer to Industry Canada (IC) website at: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf09888.html>*

**IDA – Singapore**

|                               |   |
|-------------------------------|---|
| Line Terminal Equipment       | All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2009, Annex 2       |
| Radio-Communication Equipment | All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2009, Annex 2 |

*\*Please refer to Info-Communication Development Authority (IDA) Singapore website at: [http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies\\_and\\_Regulation\\_Level2/20060609145118/MRARecScheme.pdf](http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level2/20060609145118/MRARecScheme.pdf)*

(A2LA Cert. No. 2742.02) Revised 12/16/2010

*Peter Maye* Page 1 of 2



**OFTA – Hong Kong**

Radio Equipment HKTA 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1015, 1016, 1019, 1020, 1022, 1026, 1027, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055

*\*Please refer to the Office of the Telecommunications Authority's website at:  
<http://www.ofta.gov.hk/en/standards/HKTASpec/hkta-10xx.html>*

Fixed Network Equipment HKTA 2001, 2005, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2040, 2041, 2102, 2103, 2104, 2108, 2201, 2202, 2203, 2204

*\*Please refer to the Office of the Telecommunications Authority's website at:  
<http://www.ofta.gov.hk/en/standards/HKTASpec/hkta-2xxx.html>*

**MIC – Japan**

Terminal Equipment Scope A1 - Terminal Equipment for the Purpose of Calls

Radio Equipment Scope B1 - Unlicensed Station (all classes of equipment)

**SIEMIC ACCREDITATION DETAILS: FCC Test Site Registration No. 783147**

**FEDERAL COMMUNICATIONS COMMISSION**

Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046

June 08, 2011

Registration Number: 783147

SIEMIC Laboratories  
2206 Ringwood Avenue,  
San Jose, CA 95131

Attention: Leslie Bai, Director of Certification

Re: Measurement facility located at San Jose  
Anechoic chamber (3 meters)  
Date of Renewal: June 08, 2011

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish  
Industry Analyst



**SIEMIC ACCREDITATION DETAILS: Industry of Canada CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

March 4, 2009

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by Industry Canada (IC), under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: SIEMIC, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131 USA  
Identification No.: US0160  
Recognized Scope: CS-03 Part I, II, V, VI, VII and VIII

You may submit test data to IC to verify that the equipment to be imported into Canada satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have any questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: CAB Program Manager

**SIEMIC ACCREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842-1**



May 27, 2010

OUR FILE: 46405-4842  
Submission No: 140856

**Siemic Inc.**  
2206 Ringwood Ave  
San Jose, CA, 95131  
USA

*Attention:* Snell Leong

Dear Sir/Madame:

The Bureau has received your application for the renewal of a 3m alternative test site. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought (**4842A-1**). Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please keep for your records the following information:

- Your primary code is: **4842**
- The company number associated to the site(s) located at the above address is: **4842A**

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 or later shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 metre OATS or 3 metre chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed two years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL:  
[http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/enh\\_1100052e.html](http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/enh_1100052e.html).

If you have any questions, you may contact the Bureau by e-mail at [certification.bureau@ic.gc.ca](mailto:certification.bureau@ic.gc.ca). Please reference our file and submission number above for all correspondence.

Yours sincerely,

Deborah Gill  
For: Wireless Laboratory Manager  
Certification and Engineering Bureau  
3701 Carling Ave., Building 24  
P.O. Box 11450, Station "E"  
Ottawa, Ontario, K2H 8S2  
Email: [deborah.gill@ic.gc.ca](mailto:deborah.gill@ic.gc.ca)  
Tel. No. (613) 998-8263  
Fax No. (613) 990-4752

**SIEMIC ACCREDITATION DETAILS: FCC DOC CAB Recognition : US1109**

**FEDERAL COMMUNICATIONS COMMISSION**

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

August 28, 2008

Siemic Laboratories  
2206 Ringwood Ave.,  
San Jose, CA 95131

Attention: Leslie Bai

Re: Accreditation of Siemic Laboratories

Designation Number: US1109  
Test Firm Registration #: 540430

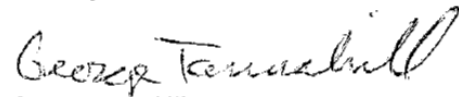
Dear Sir or Madam:

We have been notified by American Association for Laboratory Accreditation that Siemic Laboratories has been accredited as a Conformity Assessment Body (CAB).

At this time Siemic Laboratories is hereby designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Parts 15 and 18 of the Commission's Rules.

This designation will expire upon expiration of the accreditation or notification of withdrawal of designation.

Sincerely,



George Tannahill  
Electronics Engineer

**SIEMIC ACCREDITATION DETAILS: Australia CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899-

November 20, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Australian Communications and Media Authority (ACMA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: Siemic, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131  
Identification No.: US0160  
Recognized Scope: EMC: AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4  
Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771  
Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar, at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST

**NIST**

**SIEMIC ACCREDITATION DETAILS: Korea CAB ID: US0160**


**방송통신위원회 전파연구소**  
 Radio Research Agency  
**KOREA COMMUNICATIONS COMMISSION**  
**REPUBLIC OF KOREA**  
 1, Wonhyoro-3ga, Yongsan-gu, Seoul, 140-848, Korea

**Radio Research Agency**  
 Tel: +82 2 710 6610  
 Fax: +82 2 710 6619  
 Homepage : www.rra.go.kr

KCC/RRA

14<sup>th</sup> Jan, 2011

Radio Research Agency  
 Korea Communications Commission  
 #1, Wonhyoro-3ga, Yongsan-gu  
 Seoul Korea 140-848  
 (Tel) 82-2-710-6610, (Fax) 82-2-710-6619  
 Jan 14<sup>th</sup>, 2011

Mr. David F. Alderman  
 Group Leader, Standards Coordination and Conformity Group  
 National Institute of Standards and Technology  
 100 Bureau Drive, Stop 2100  
 Gaithersburg, Maryland 20899-2100, USA

Dear Mr. David F. Alderman:

This is to confirm the recognition by Radio Research Agency of

**SIEMIC, Inc. (US0160)**

as an accredited Conformity Assessment Body (CAB) under the terms of Phase I of the APEC TEL MRA. The scope for which this laboratory has been recognized is given below.

| Coverage      | Standards   | Date of Recognition         |
|---------------|---|-----------------------------|
| Current Scope | EMI : KCC Notice 2008-39, RRL Notice 2008-3 and KN22<br>EMS : KCC Notice 2008-38, RRL Notice 2008-4, KN24, KN 61000 -4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11<br>Radio : RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-11, RRL Notice 2007-80, RRL Notice 2004-68<br>Telecom : President Notice 20664, RRL Notice 2007-30, 2008-7(1,3,4,5,6) | Jan 14 <sup>th</sup> , 2011 |
| Updated Scope | SAR : RRA Notice 2008-16, RRA Notice 2008-18, KCC Notice 2009-27  |                             |

This recognition is contingent upon the maintenance of this CAB's accreditation status and is limited to the standards listed above.  
 If you have any inquiries about this recognition, please contact to Certification Division of Radio Research Agency with above address and telephone numbers.

Best Regards,

Ahn, Kun-Young  
 Director Certification Division



Enclosure

cc: Ramona Saar - NIST,  
JungMin Park - RRA



**SIEMIC, INC.**  
Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To: FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
Page 94 of 104  
www.siemic.com

**SIEMIC ACCREDITATION DETAILS: Taiwan BSMI Accreditation No. SL2-IN-E-1130R**



**UNITED STATES DEPARTMENT OF COMMERCE**  
National Institute of Standards and Technology  
Gaithersburg, Maryland 20899

May 3, 2006

Mr. Leslie Bai  
SIEMIC Laboratories  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

I am pleased to inform you that your laboratory has been recognized by the Chinese Taipei's Bureau of Standards, Metrology, and Inspection (BSMI) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. You may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. The pertinent designation information is as follows:

- BSMI number: **SL2-IN-E-1130R** (Must be applied to the test reports)
- U.S. Identification No: **US0160**
- Scope of Designation: **CNS 13438**
- Authorized signatory: **Mr. Leslie Bai**

The names of all recognized CABs will be posted on the NIST website at <http://ts.nist.gov/mra>. If you have any questions, please contact Mr. Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group

cc: Jogindar Dhillon

**NIST**

**SIEMIC ACCREDITATION DETAILS: Taiwan NCC CAB ID: US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

March 16, 2009

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the National Communications Commission (NCC) for the requested scope expansion under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

- CAB Name: SIEMIC, Inc.
- Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131
- Identification No.: US0160
- Current Scope: LP0002, PSTN01, ADSL01, ID0002, IS6100 and CNS 14336
- Additional Scope: PLMN07

You may submit test data to NCC to verify that the equipment to be imported into China satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Ramona Saar



**SIEMIC ACCREDITATION DETAILS: Vietnam CAB ID: US0160**

**BỘ THÔNG TIN VÀ TRUYỀN THÔNG      CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM**  
**Độc lập - Tự do - Hạnh phúc**

Số: *65* /QĐ-BTTTT      Hà Nội, ngày *19* tháng *01* năm *2011*

**QUYẾT ĐỊNH**  
**VỀ VIỆC Thừa nhận Phòng đo kiểm**

**BỘ TRƯỞNG BỘ THÔNG TIN VÀ TRUYỀN THÔNG**

Căn cứ Nghị định số 187/2007/NĐ-CP ngày 25/12/2007 của Chính phủ quy định chức năng, nhiệm vụ, quyền hạn và cơ cấu tổ chức của Bộ Thông tin và Truyền thông;  
Căn cứ Quyết định số 172/2003/QĐ-BBCVT ngày 29/10/2003 của Bộ trưởng Bộ Bưu chính, Viễn thông (nay là Bộ Thông tin và Truyền thông) quy định về việc thừa nhận các Phòng đo kiểm đã được các Bên tham gia Thỏa thuận thừa nhận lẫn nhau về đánh giá hợp chuẩn thiết bị viễn thông với Việt Nam chỉ định;  
Theo đề nghị của Vụ trưởng Vụ Khoa học và Công nghệ,

**QUYẾT ĐỊNH:**

**Điều 1.** Thừa nhận phòng đo kiểm:  
**SIEMIC, INC. – US0160**  
Địa chỉ: 2206 Ringwood Avenue, San Jose, CA 95131 USA

(đã được Viện tiêu chuẩn và công nghệ quốc gia Hoa Kỳ (NIST) chỉ định và đề nghị thừa nhận) đáp ứng đầy đủ các yêu cầu về việc thừa nhận Phòng đo kiểm đã được Bên tham gia Thỏa thuận thừa nhận lẫn nhau về đánh giá hợp chuẩn thiết bị viễn thông với Việt Nam chỉ định theo Quyết định số 172/2003/QĐ-BBCVT với phạm vi thừa nhận kèm theo Quyết định này.

**Điều 2.** Phòng đo kiểm có tên tại Điều 1 có các quyền lợi và nghĩa vụ theo quy định tại Quyết định số 172/2003/QĐ-BBCVT.


**Điều 3.** Phòng đo kiểm có tên tại Điều 1 và các cơ quan, tổ chức có liên quan chịu trách nhiệm thi hành Quyết định này.

**Điều 4.** Quyết định này có hiệu lực đến ngày 30/09/2012. / *ll*

**Nơi nhận:**

- Như Điều 3;
- Bộ trưởng (để b/c);
- Trung tâm Thông tin (để đăng website);
- Lưu: VT, KHCN.

**KT. BỘ TRƯỞNG**  
**THỦ TRƯỞNG**



**Nguyễn Thành Hưng**





**SIEMIC, INC.**

Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To: FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
Page 97 of 104  
www.siemic.com

**SIEMIC ACCREDITATION DETAILS: Mexico NOM Recognition**



CAMARA NACIONAL  
DE LA INDUSTRIA  
ELECTRONICA, DE  
TELECOMUNICACIONES  
E INFORMATICA

**Laboratorio Valentín V. Rivero**

México D.F. a 16 de octubre de 2006.

**LESLIE BAI  
DIRECTOR OF CERTIFICATION  
SIEMIC LABORATORIES, INC.  
ACCESSING GLOBAL MARKETS  
P R E S E N T E**

En contestación a su escrito de fecha 5 de septiembre del año en curso, le comento que estamos muy interesados en su intención de firmar un Acuerdo de Reconocimiento Mutuo, para lo cual adjunto a este escrito encontrara el Acuerdo en idioma ingles y español preferado de los cuales le pido sea revisado y en su caso corregido, para que si esta de acuerdo poder firmarlo para mandarlo con las autoridades Mexicanas para su visto bueno y así poder ejercer dicho acuerdo.

Aprovecho este escrito para mencionarle que nuestro intermediario gestor será la empresa Isabel de México, S. A. de C. V., empresa que ha colaborado durante mucho tiempo con nosotros en lo relacionado a la evaluación de la conformidad y que cuenta con amplia experiencia en la gestión de la certificación de cumplimiento con Normas Oficiales Mexicanas de producto en México.

Me despido de usted enviándole un cordial saludo y esperando sus comentarios al Acuerdo que nos ocupa.

Atentamente:

**Ing. Faustino Gomez González  
Gerente Técnico del Laboratorio de  
CANIETI.**

Calle 56 71  
Hidroreino Córdoba  
06100 México, D.F.  
Tel: 5264-0936 con 12 líneas  
Fax 5264 0488  
www.canieti.org

**SIEMIC ACCREDITATION DETAILS: Hong Kong OFTA CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899-

December 8, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Office of the Telecommunications Authority (OFTA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: SIEMIC, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, California 95131 USA  
Identification No.: US0160  
Recognized Scope: **Radio:** HKTA 1002, 1007, 1008, 1010, 1015, 1016, 1020, 1022, 1026, 1027, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1039, 1041, 1042, 1043, 1044, 1046, 1047, 1048, 1049, 1051  
**Telecom:** HKTA 2011, 2012, 2013, 2014, 2017, 2018, 2022, 2024, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033

You may submit test data to OFTA to verify that the equipment to be imported into Hong Kong satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Ramona Saar

**NIST**



**SIEMIC, INC.**

Accessing global markets

Title: RF Test Report of Avery Dennison Retail Information Services LLC  
Model : 129514  
To FCC 15.247: 2011 & RSS-210 Issue 8: 2010

Serial# SL11081802-AVE-017-01\_(6057BT)\_FCC&IC  
Issue Date November 03 2011  
Page 99 of 104  
[www.siemic.com](http://www.siemic.com)

**SIEMIC ACCREDITATION DETAILS: Australia ACMA CAB ID: US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899-

November 20, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Australian Communications and Media Authority (ACMA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: Siemic, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131  
Identification No.: US0160  
Recognized Scope: EMC: AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4  
Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771  
Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar, at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST



**SIEMIC ACCREDITATION DETAILS: Australia NATA Recognition**



Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

November 4, 2008

Under Australian government legislation, the Australian Communications and Media Authority (ACMA) has determined the National Association of Testing Authorities, Australia (NATA) as an accreditation body as per Section 409(1) of the Telecommunications Act 1997 (Cth). Pursuant to Section 409(2) of the Telecommunications Act 1997 (Cth), I am pleased to advise that your laboratory has been determined as a Recognised Testing Authority (RTA).

This determination has been made on the basis of your accreditation by A2LA accreditation no. 2742.01 and the Mutual Recognition Agreement between NATA and A2LA. It is effective from 11 July 2008. RTA status applies only to the following standards and is contingent upon their continued inclusion in your laboratory's scope of accreditation.

**AS/ACIF S002, AS/ACIF S003, AS/ACIF S004,  
AS/ACIF S006, AS/ACIF S016, AS/ACIF S031,  
AS/ACIF S038, AS/ACIF S041 and  
AS/ACIF S043.2**

As an RTA, your laboratory has the following obligations:

1. the laboratory shall continue to meet all of the accreditation criteria of A2LA;
2. the authorised representative of the laboratory shall notify NATA of changes to the staff or operations of the laboratory which would affect the performance of the tests for which the laboratory has been determined;
3. compliance of equipment shall be reported on test reports bearing the A2LA logo/endorsement.

Current information on the Australian Communications and Media Authority and regulatory requirements for telecommunications products within Australia can be obtained from the ACMA's web-site at "<http://www.acma.gov.au>". Further information about NATA may be gained by visiting "<http://www.nata.asn.au>".

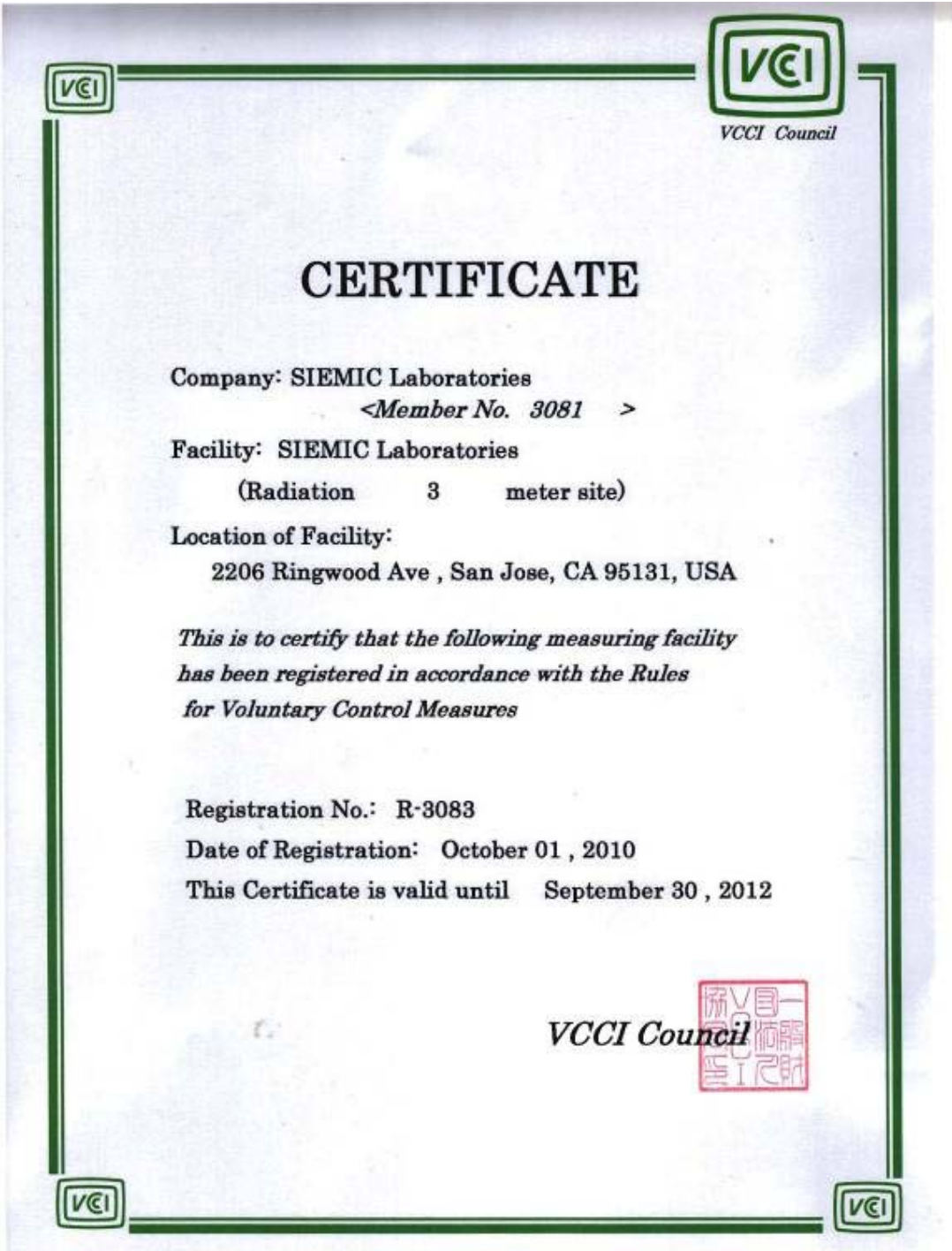
Please note that AS/ACIF S040 and New Zealand standards do not form part of the RTA scheme.

Your RTA listing will appear on the NATA website shortly.

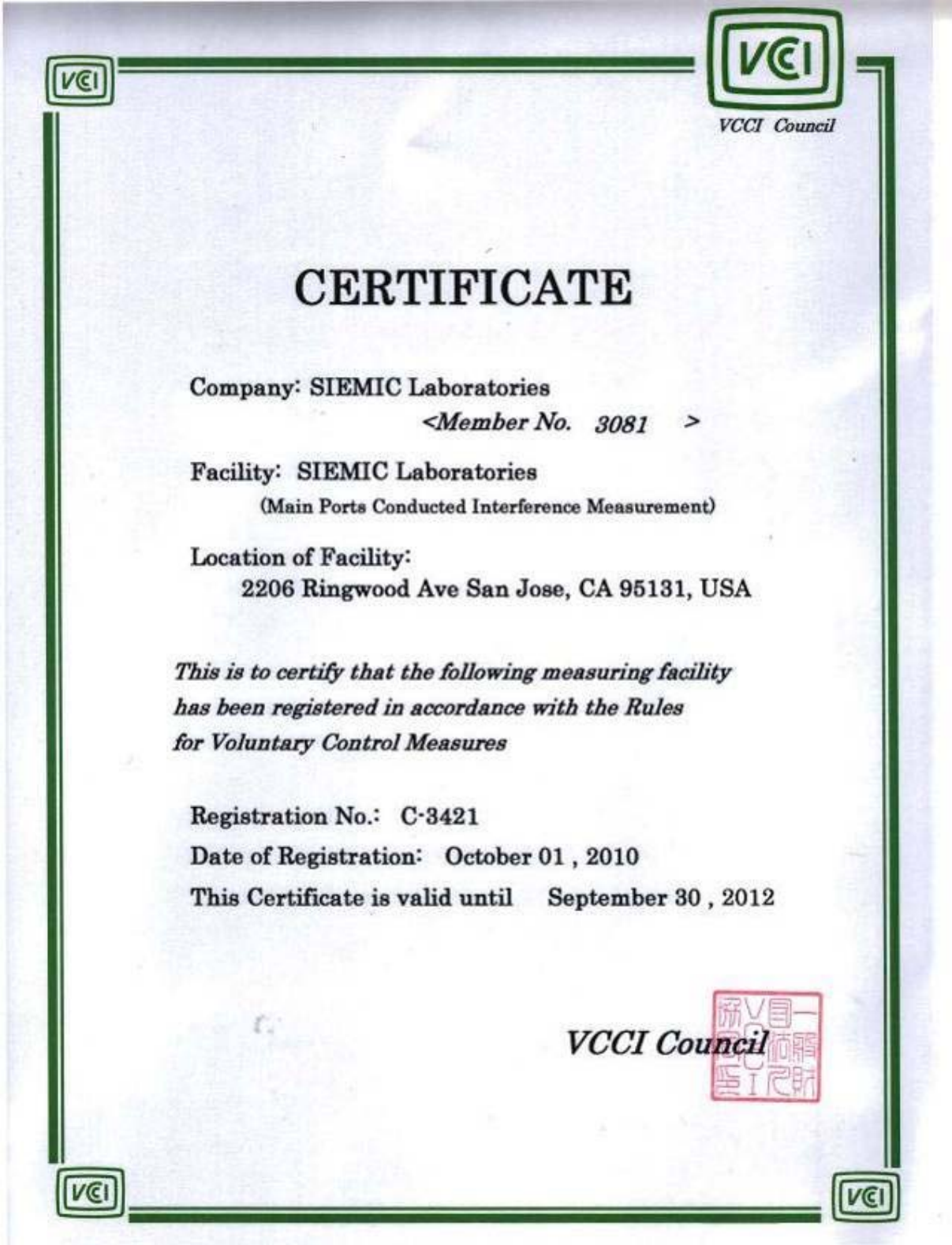
Kind Regards

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**SIEMIC ACCREDITATION DETAILS: VCCI Radiated Test Site Registration No. R-3083**



**SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Main Port) Test Site Registration No. C-3421**



# CERTIFICATE

**Company: SIEMIC Laboratories**  
*<Member No. 3081 >*

**Facility: SIEMIC Laboratories**  
(Main Ports Conducted Interference Measurement)

**Location of Facility:**  
2206 Ringwood Ave San Jose, CA 95131, USA

*This is to certify that the following measuring facility  
has been registered in accordance with the Rules  
for Voluntary Control Measures*

**Registration No.:** C-3421  
**Date of Registration:** October 01 , 2010  
**This Certificate is valid until** September 30 , 2012

**VCCI Council**

A red square seal with Chinese characters, likely an official stamp of the VCCI Council.

**SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Telecom Port) Test Site Registration No. T-1597**

